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ABSTRACT

This collection of papers addresses three important aspects of professional practice schools: student learning, teacher development, and implementation issues related to collaboration among institutions and state policy environment. The first paper, "The Child as Meaning Maker: The Organizing Theme of Professional Practice Schools" (Ellen M. Pechman), focuses on the implications for classrooms and schools in what is known about how children learn and develop socially and emotionally. The new roles teachers play as mediators of student learning are discussed. The second paper, "Teacher Development in Professional Practice Schools" (Ann Lieberman and Lynne Miller), builds on a concept of professional practice, maintaining that teachers themselves are an important source of knowledge about teaching and equating the renewal of teaching with the renewal of schools. A framework is offered for developing a school culture that supports continuous inquiry and the improvement of teaching. The third paper, "Professional Practice Schools in Context: New Mixtures of Institutional Authority" (Barbara Neufeld), lays out a number of areas of critical importance in implementing professional practice schools, such as issues surrounding collaboration among institutions, definitions of teaching and learning, and the policy context in which design and implementation will take place. The final paper, "Afterword: A Look at Professional Practice Schools with an Eye toward School Reform" (Marsha Levine), discusses the relationship of these schools to the broader school restructuring agenda. (JD)

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VOLUME TWO

PROFESSIONAL PRACTICE SCHOOLS:

BUILDING A MODEL

VOLUME II

Marsha Levine

Co-Director
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American Federation of Teachers

Project Director

With Support From
The Exxon Education Foundation

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FOREWORD

The education of teachers for restructured schools is a key element in the transformation of public education for the twenty-first century. What teachers know and are able to do is profoundly influenced by the ways in which they learn. Professional Practice Schools are designed to provide a context in which teachers can develop the skills they need to support meaningful student learning. In an environment characterized by collegiality and an orientation toward problem solving, teachers can become professional practitioners with a capacity to reflect upon their own teaching and contribute to the ongoing process of self-renewal in schools.

The contributors to this volume extend our understanding of why we need professional practice schools, and what it will take to make them a reality.

Albert Shanker
President
American Federation of Teachers

Acknowledgements

I would like to thank the Exxon Education Foundation for their continuing support of the AFT Professional Practice Schools Project. I am particularly grateful to Mr. L. Scott Miller, Education Program Officer, for his guidance, support, and confidence in our ability to carry out this effort.

I would like to thank the authors Ann Lieberman, Lynne Miller, Barbara Neufeld, and Ellen Pechman for their excellent contributions. Through conversations and in their writing they have extended and deepened our understanding of the relationship between school reform and teacher education.

And finally, a special thanks to Chris Bedner for her patience and diligence in preparing the manuscripts for publication.

Marsha Levine
June 1990

PROFESSIONAL PRACTICE SCHOOLS: BUILDING A MODEL II

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PROFESSIONAL PRACTICE SCHOOLS:
BUILDING A MODEL II

Introduction

Marsha Levine

This is the second in a series of publications related to the design and implementation of professional practice schools. The American Federation Teachers, with support from the Exxon Education Foundation, has an ongoing project devoted to developing restructured public schools with the responsibility for the clinical education of new teachers and a dedication to supporting continuous examination of practice.

The first monograph, Professional Practice Schools: Building a Model (Levine, 1988), includes a discussion of key dimensions of such schools. In that work, Tamar Gendler and I open by providing the background, laying out a conceptual framework, reviewing the political and policy environment in which such schools might be initiated, and identifying several of their precursors. In addition, the volume contains three papers which deal with important aspects of such schools. Linda Darling-Hammond's paper focuses on the role of professional practice schools with respect to professional accountability. Holly Houston deals with such schools' institutional standards. Mary Kennedy addresses the curriculum requirements for the clinical teacher education program.

This collection of papers addresses three additional but equally important aspects of professional practice schools. These are: student learning; teacher development; and implementation issues related to collaboration among institutions and state policy environments. The relationship of professional practice schools to the broader school restructuring agenda is also examined in a brief concluding paper.

Student Learning

Some may wonder why anyone would want to send a child to a school in which there are many beginning teachers. People don't want their children to be practiced on by novices. Ellen Pechman answers the question: "What happens to the child in the professional practice school?" She begins with the conception of the professional practice school as designed by the AFT Task Force (see the first publication, Professional Practice Schools: Building a Model). Pechman then poses questions about what we know about the children coming to school today and about the way they develop and learn socially and emotionally. Following an excellent synthesis of the literature, she then asks what it all implies for the way schools ought to be. The research and analysis she presents lead to the conclusion that schools need to be different from what they now are and that the design of professional practice schools is consistent with those implications. The author builds the case for interactive learning, inquiry-driven instruction, and parental involvement. She describes the new roles teachers will play as mediators of student learning and as professionals in school-based decision-making. She concludes with the observation that schools devoted to educational problem solving and approaches reflecting the best research in teaching processes on behalf of the students, direct their faculties and new teachers to be reflective and innovative, not "experimental" in the pejorative sense of using untried and under-researched methods. The examination of practice and the continuous search for better ways of teaching is professional practice in the best interests of children.

Teacher Development

The concept of professional practice schools includes continuous growth and development of teachers through the examination of their own, and of school-based practices. Ann Lieberman and Lynne Miller deal with these questions in their paper. They build on a concept of professional practice, maintaining that teachers themselves are an important source of knowledge about teaching, and equating the renewal of teaching with the renewal of schools. Teacher development, their preferred description of professional growth activities, means varied activities that are always directed at continuous inquiry and the improvement of teaching.

The authors offer a framework for developing a school culture that will support such inquiry, and they identify the problems and dilemmas that exist in creating it. Essential elements of the culture include norms of colleagueship, new concepts of teacher leadership in curriculum and instruction, opportunity and time for disciplined inquiry, development of the idea of teaching as research, and recognition of the need for networks and coalitions to link like-minded teachers, schools, and districts to one another for education and support. The authors conclude by warning that the continuous education of faculty in a professional practice school must be self-consciously linked to the improvement of student learning--and that the connection is not a given.

Implementation Issues

Barbara Neufeld has laid out a number of areas of critical importance in implementing professional practice schools. The important issues cluster in three main areas:

- those surrounding collaboration among institutions;

- those which involve the definitions of teaching and learning that undergird the professional practice schools and their implications for what people need to know and be able to do; and

- the policy context in which design and implementation will take place.

The creation of collaborative institutions will, by definition, mean changes for all participants. Each entity (university, school district, union) will need to alter the pattern of relations among authorities that characterized past associations. All will have to rethink what they believe about the nature and sources of knowledge about teaching and learning to teach. Each will have to examine the incentive structures which govern people's behavior. Each will have to assist individuals in learning new roles and taking on new responsibilities.

In the broader policy context, professional practice schools will be created in preexisting environments characterized by policies that define teaching in ways that are perhaps different from the philosophy underlying professional practice schools. In some states, policies and programs developed to enhance teacher professionalism may support these institutions, but other approaches will present obstacles. Through examples of various existing policies, Neufeld provides a framework for others to use in examining the context in which they are working to sort out what is supportive to the effort and what changes might be pursued.

Neufeld points out many challenges likely to arise as people move down this road to better teaching through professional practice schools. With any luck, the innovators will not meet all the obstacles she describes, but having a framework to identify the issues should help prepare them for potential pitfalls. Certainly, knowing that the obstacles are not unusual should make them easier to talk about and provide the basis for networking and problem-solving efforts across sites.

It is also useful to keep in mind that many of the problems described here are already being experienced and dealt with by people involved in restructuring schools all around the country. Unions, school districts, school faculties, and administrators have, for example, sought and received dispensations to experiment through waivers and exceptions involving district and state rules and regulations and union/management contract clauses. Numerous successful school/university collaborations can provide models for working together and working out differences.

That obstacles exist is given. The willingness of all the participants to address those issues together is required. The expectation that potential or actual difficulties can be successfully conquered provides a positive and productive orientation toward change. As Neufeld suggests, the creation of professional practice schools "will be an adventure that requires a good bit of risk taking, a tolerance for not 'getting it right' the first time, and a firm commitment to the long term goals."

Marsha Levine

Professional Practice Schools and the Broader Reform Agenda

This book concludes with a short paper defining the role of professional practice schools in restructuring public education. These institutions can play three critical roles to support the larger effort. First, because professional practice schools are designed to support continuous examination of practice, they can generate an important part of the knowledge base needed to undergird the school restructuring effort. Second, because they are restructured schools, they can provide for the education and socialization of new teachers in such transformed environments. And third, they can serve as exemplars or models of institutions designed to support such practice.

In all these ways they can be an effective lever for school change.

Reference

M. Levine, (Ed.). (1988). Professional practice schools: Building a model (Monograph No. 1). Washington, DC: American Federation of Teachers. (Available from the AFT Center for Restructuring, Educational Issues Department, 555 New Jersey Avenue, N.W., Washington, D. C. 20001)

THE CHILD AS MEANING MAKER:

THE ORGANIZING THEME FOR PROFESSIONAL PRACTICE SCHOOLS

Ellen M. Pechman

North Carolina State University

April 1990

This paper was commissioned by the American Federation of Teachers under a grant from the Exxon Education Foundation. It is one of a series of papers designed to examine the potential of professional practice schools.

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THE CHILD AS MEANING MAKER:
THE ORGANIZING THEME FOR PROFESSIONAL PRACTICE SCHOOLS

Ellen M. Pechman

> What [children's] bodies, minds, and emotions will be like as they are growing and when they are grown depends to an appreciable extent on how they are exercised.
>
> — L. S. Mitchell (1950, p. 9)

> Meaning is not given to us in our encounters, but it is given by us--constructed by us, each in our own way, according to how our understanding is currently organized.
>
> — E. Duckworth (1987, p. 112)

Professional practice schools seek to transform the mission of teaching from truth telling and inculcating knowledge (Cohen, 1988) to guiding invention and inquiry (Levine, 1988). This changing vision of teaching is inextricably linked to society's transition from an industrial to an information-driven economy and to a new conception of both children and the learning process.

Until recently, schools were structured to develop the intellectual potential of only a limited segment of society. In the early part of the 20th century, over 90 percent of the initial group registering left before the end of high school (Resnick & Resnick, 1977). Although schools regularly graduate about 75 percent of their entering populations today, the 25 percent who leave before finishing are disproportionately minority and poor. Most unfortunately, these drop outs constitute over 50 percent of the high school youth in many large cities and rural communities (Levin, 1989).

This group represents too large a loss of human potential, especially given our present capacity to educate students who once dropped or were pushed out of schools. In the past generation, researchers across several social science disciplines have demonstrated that, regardless of circumstance, culture, or prior experience, children are naturally motivated to learn, inspired by what has been called "the challenge of the problematic" (Getzels, 1977, p. 495). Learning is active, dynamic, and continuous; and, importantly, it is inherently an individual, as well as a social experience (Bruner, 1986; Collins, 1984b; Resnick, 1987b; Tharp, 1989). Young learners, especially, are remarkably adaptive and inventive; the challenge for schools is to engage their full capacities in a curriculum that benefits both them and their community.

This perspective on learning is rooted in a long, proud history that dates back to Plato and has been debated especially actively throughout this century (Note 1). Two important distinctions exist, however, between the arguments in this paper and those made in the past. First, we can now point to solid empirical evidence for this paradigm of learning converging from several fields in addition to education--including psychology, sociology, anthropology, and linguistics. Second, new technology and information systems both require and enable the changes in teaching implied. In an age of ready access to computer bulletin boards and conferencing, video displays, interactive television, and other satellite-transmitted information, practitioners can, more easily than ever before, exchange ideas, share their developing procedures, and objectively evaluate their achievements.

The discussion in this paper establishes the rationale for professional practice schools within a concept of the learner as a "problem-finding" organism (Getzels, 1977, p. 495) and of learning as a process of creating meaning out of a vivid collage of events, interactions, and ideas. It argues that schools are most effective when they are designed on the basis of three assumptions about children and their cognitive processes. First, children are natural individual learners, continuously engaged in constructing meaning from the culture in which they live. Second, since learning is also a social and group experience, it requires continuous interchange and negotiation among peers and adults. Finally, by implication, the purpose of education is to connect children, through their active propensity to learn, to their culture and community in the widest sense. "The language of education," suggests Bruner (1986), "is the language of culture creating, not of knowledge consuming or knowledge acquisition alone" (p. 133).

Active, social learners require responsive, inventive learning environments. Professional practice schools, described in the other papers commissioned for this project, provide such settings both for children andfor adults. This discussion concentrates on children, answering three basic questions: Who are the learners served by professional practice schools? How do they learn? How should classrooms and schools be organized to meet the needs of these learners?

Ellen Pechman

Who Are the Learners?

Demographic Characteristics

Although the present structure of schools may have served well the Norman Rockwell family of four--father at work and mother at home with two children--today this description characterizes only seven percent of American families (Hodgkinson, 1988). Not surprisingly, the country's rapidly changing demography, combined with a modern view of learners, requires new designs for schools to integrate a more accurate understanding of the nature of learning with a better sensitivity about who our learners are. The present student population differs in four major ways from the students of the past quarter century, for whom most school programs were designed.

Growing proportion of minorities. First, over one-third of the nation's students are from nonwhite racial and ethnic minority groups segregated from the American mainstream and living within what Ogbu (1978) calls either "caste-like" or "immigrant" minority cultures. Cummins (1986) would call such groups "disempowered" minorities. For these students, schools are foreign communities with distinctive cultures and expectations of their own. Children from caste-like minority groups have grown up in families historically neglected and often rejected by schools. Such offspring have developed adaptive responses to the hostile treatment they and their families have received. The result is alienation, combined with distrust and skepticism, which adversely influences some minority students' responses and levels of involvement in school. Immigrant minority groups do not always carry the mantle of historical mistreatment, but the sharp contrast of cultures between home and school may also be disabling until students and their families find a place in the mainstream (Ogbu, 1987).

Minority status compounded by segregation creates culturally isolated pockets within an apparently affluent society. Children growing up in these pockets usually learn to live effectively within their home culture but often do not learn lessons that generalize well to school and to the mainstream community (Comer, 1988a).

Relatively more poor children. Poverty and economic isolation also separate children from their schools and their teachers and constitute a second factor that differentiates today's students (Berlin & Sum, 1988) from yesterday's. About 30 percent of elementary and secondary students are disadvantaged economically (Levin, 1988), and this proportion is rising rapidly. For the first time in recent history, children represent the largest segment of the nation's poor, with almost 25 percent of all children and 17 percent of school age children living in poverty (Hodgkinson, 1988). Rarely do poor families have sufficient nutrition and health services to enable them to develop fully the capacities of their youth. The high birth rates among society's poorest and most isolated population segments combine with rapid immigration from vastly different societies of child-bearing adults with little formal schooling. This combination of factors increases the numbers of students whose readiness for education poorly matches what awaits them in most schools. Yet, typically, the poorest communities are served by the poorest schools. As Brandwein (1981) writes, "All things considered, specific communities get the kind of schools their economic and social conditions permit" (p. 3).

Increasing numbers of handicapped students. A third reason for the changing face of the school population is that medical advances and an increasing commitment to mainstreaming handicapped students means that larger proportions of children with physical and emotional handicaps are in school than ever before. The improvements in medical assistance for the poor, while inadequate, have nevertheless enabled more low-birth-weight and premature babies of impoverished families to survive. Unfortunately, however, there is a 30 percent chance that permanent damage will inhibit these youngsters' physical or cognitive development (Hodgkinson, 1988).

Schools potentially offer the community the best resource for serving these children. But schools cannot help adequately without adapting their organizational structures and instructional approaches to accommodate their students' enormously individual and diverse special needs (Kagan, 1989).

A Growing Concern to Educate All Students. A final factor that alters the demographic landscape for schools is that where once schools willingly dropped or pushed out the bottom segment of the educable population, there are now well-articulated policy commitments to keeping every student in school, regardless of his or her success. Until recently, disaffected students could and did leave school and find places in the job pool, but, as reflected in teen-age unemployment rates, this alternative is decreasingly available for young people because there are fewer jobs for students without an education (Levin, 1989).

Children's first critical emotional attachments are to the family and its network. They build upon these bonds to cultivate the social, emotional, linguistic, and cognitive skills necessary for their future academic development. Thus, a major implication of the shifting demographics is that it is incumbent on schools to assure a more effective alignment with the changing needs of their new clientele (Comer, 1988b). When teachers mold the classroom experience so that it is compatible with the culture of the community, children are more likely to make a successful transition into the mainstream (deLone, 1979; Hale, 1982).

Alignment of School and Home Environment

Children's adjustments to new environments are cushioned when they have to make the fewest accommodations in their first forays away from home. White and Siegel (1984) explained the experience as follows:

> It is the somewhat pleasant, but scary, destiny of small children to be faced constantly with the task of going to where they have never been before, of meeting and dealing with people they have never seen before, of doing things they have never done before. In a new environment, they have to arrive at emotional and social settlements before they begin to enter into the problems and processes of intellectual problem solving. They have to ask, "Is it safe here?" "Can somebody like me be here?" "Can I trust the people here?" "Can I trust myself to manage what I have to?" (p. 253)

If people at school look and act like those at home, and if objects, food, language, and customs overlap, children readily find their places, quickly adapting to and learning from the rich details of the new setting. By contrast, schools that are poorly aligned with children's homes force children, on their own, to interpret myriad new interpersonal interactions, rules, expectations, and behaviors. The nuance of detail--the stuff of the school curriculum--comes only after the environment becomes familiar and secure, if at all. The all too frequent "social misalignment" (Comer, 1988a) between home and school that is most typical in nonmainstream communities impairs the relationships among children, teachers, and families, causing early mutual mistrust and alienation that is difficult to overcome.

Disruption of Family Life

Coleman (1987; see also deLone, 1979) describes an aspect of the learners in today's schools that cuts across cultural, economic, and racial or ethnic lines. According to Coleman, the society has transformed its relationship with the family, undermining its primary responsibility for rearing and socializing children. Coleman argues that the family has become caught in a corporate world that leaves children without a reliable social structure for support, reducing parental authority and incentives for parental responsibility. Households, extended families, and neighborhoods have been replaced by offices and factories as the dominant social institutions. This has substantially eroded what Coleman describes as critical "social capital"--the prevailing norms, social networks, and relationships necessary to motivate children's formal learning and to connect them to the mainstream (p. 36).

As the corporate world has come to dominate our society, the institutional infrastructure within communities that bonded earlier generations, neighborhoods, and friendship groups has crumbled, disrupting the traditional means for establishing the psychological well-being of children. Furthermore, as family and community ties to children weaken, it has become increasingly necessary for government to set policies that counteract the disruptive effects of these economic and social adjustments. Children require clear direction and guidance for healthy development. Schools are a significant existing resource that, with proper structuring and planning, can be available to restore the nurturing and direction that children need in a fast-paced technological world. However, as Cremin (1966) and others have pointed out, schools cannot, nor should they be asked to compensate disadvantaged children for the deprivation they suffer at society's hands. Schools can help, but they make up only a part of children's education, which takes in their whole cultural, social, and familiar background.

Schools will not fill the void if they are guided by an antiquated view of the learner or a rigid traditional curriculum. Instead, the necessary connections, those that affirm children's dignity and inculcate a sense of personal identity and commitment, are rooted in relationships with peers and adults in the community. Intensity of personal involvement, persistence, continuity, and intimacy are the elements in the glue that bonds young people to their society and the society to its young (see Hamburg, 1987: Levin, 1988; Schorr & Schorr, 1988; Wilson, 1987; and Zigler, Kagan & Klugman, 1983).

How Do Children Learn?

Broadened definitions of intelligence acknowledge human beings' inherent inventiveness and capacity to construct effective plans, to solve problems, and to determine successful coping strategies in new circumstances, even without direct teaching (Gardner, 1985; Piaget, 1964, 1967; Resnick, 1987b; Sternberg, 1982; Sternberg & Wagner, 1986). Intelligence encompasses more than what was traditionally measured by IQ and achievement tests. It includes a range of creative and adaptive behaviors, information-processing strategies and skills, and problem-solving approaches, initially developed in infancy, which persist throughout life.

By closely observing learning wherever and however it occurs, we are better able to inform teaching and learning in schools. Studies of the development of cognition and intelligent behavior conducted in everyday contexts (Lave, 1988; Rogoff & Lave, 1984) have usefully differentiated cognition--the processes individuals use to acquire knowledge--and school learning, the specifically designed tasks to accumulate knowledge about a curriculum (Wagner & Sternberg, 1986).

New Views of Learning and Intelligence

To a large degree, the constructivist view of learning implied here follows from the lively debate stimulated by Piaget's (1964, 1967) formulations of intellectual development. Piaget saw intelligence as action by an individual that changes the way he or she relates to the world. The research generated by the discussion of this concept has brought a certain consensus to the field during the past two decades. "We are in the midst of a major convergence of psychological theories," Resnick (1987a) points out, and "today, cognitive scientists generally share [with Piaget] the assumption that knowledge is constructed by learners" (p. 19).

The perspective that Resnick describes holds that knowledge builds from conflict (see also Frey & Lupart, 1987; Liben, 1987a). It results when children's immature concepts inadequately explain their new experiences, and they must modify their ideas so that they are more workable. Thus, children are always building theories, posing problems, and testing outcomes. They learn from contradiction, especially when it happens in a social environment of peers. Their learning evolves both from their inventiveness in novel situations and from the increasingly refined understandings they acquire using ever newly available procedures and information.

Fischer and Bullock (1984) apply the concept of collaboration to the unified and mutually supportive way that children's learning develops. Collaboration in a learning exchange provides a "scaffold" or support for learners to climb upon. It unites children's own ideas and those of others to produce new results and to promote growth. Whether the source is a teacher, parent, friend, or a well-structured teaching tool, scaffolding and collaboration occur when children are thinking about or acting upon an object, event, or interaction. In this way, the child and the environment are joint determiners of development and new learning (see also Bruner, 1986; Cazden, 1988; Piaget, 1972, 1973; and Vygotsky, 1962).

This dynamic process is intelligence at work, "mind in action," adaptation to the demands of daily life (Scribner, 1986; Wagner & Sternberg, 1986). No assumptions about previous underlying abilities or structures of intelligence are necessary. This concept recognizes that all individuals routinely use creative thinking to meet the demands of specific situations and to contend with the logical problem solving they encounter. In this way, children are always learning.

What scientists have discovered about the strategic ways in which learners spontaneously solve problems has caused them to look for alternative means of describing and assessing intelligence. Cognitive psychologists are particularly interested in examining learners' naturally occurring analytical behavior for clues to knowledge acquisition and reasoning capacity. Traditional measures of intelligence and achievement are less and less useful diagnostic procedures for generalizing about specific teaching contexts because they do not reveal thinking processes, especially as they function in context.

Some researchers have divided theories of intelligence into those of "lumpers" and "splitters" (Weinberg, 1989). Lumpers believe that intelligence is a general trait for acquiring knowledge, reasoning, or solving problems and can be represented through people's behavior on intelligence tests. A single general factor of intelligence, based upon normative samples of the population at large, represents this general trait. Splitters, by contrast, believe there are several distinct mental capabilities. In the past, a number of theories of this kind have emerged (e.g., Guilford, 1967), the most recent of which is Howard Gardner's theory of "multiple intelligences."

H. Gardner (1985; Walters & Gardner, 1986) has identified seven "intelligences," each of which follows a different developmental path, typically peaking at different ages and calling for different kinds of nurturing and encouragement for full development. Gardner's seven intelligences are: musical; bodily-kinesthetic (i.e., athletes, dancers, actors, surgeons); logical-mathematical (scientists and other problem-solvers); linguistic; spatial; interpersonal (politicians, teachers, therapists); and intrapersonal (orientation towards one's own feelings and emotions). In Gardner's framework, intelligence refers to a problem-solving ability or set of abilities that permit a person to resolve genuine difficulties, to create a socially valued product, or to lay the groundwork for new knowledge—for example, creating a story, making a kite, or anticipating a move in chess. Intelligences are the facilities and skills that underlie the mechanisms used to solve those kinds of problems.

It is also assumed that any given intelligence relies on several dimensions and faculties simultaneously. Thus, Gardner notes that dance uses bodily and kinesthetic skills, as well as musical, interpersonal, and spatial intelligence to varying degrees. Political success requires interpersonal skills, a flair for public speaking and for argument, and logical aptitude.

Because cultural roles require several intelligences, individuals develop collections of aptitudes rather than having singular problem-solving abilities. Individuals also differ in the profile of intelligence they exhibit in a particular context (Gardner, in press). Furthermore, individuals may not be gifted in any single intelligence, but they may have a combination of skills that enable them to contribute uniquely to specific product-producing situations. Gardner argues that, in a society as complex and diverse as ours, every individual, properly guided, nurtured, and encouraged, can develop several of his or her varying clusters of abilities and their applications and can offer a unique and necessary contribution to the community.

A second recent approach to analyzing intelligence is called information processing, a step-by-step analysis of thinking processes describing how people gather information and use it to build knowledge. Mechanisms of thinking are considered universal and believed to develop with maturity and experience, although proficiency in using cognitive processes within specific content domains requires practice and training. Environmental adaptation, handling novel task demands, learning from experience, and the ability to select and apply appropriate strategies are examples of universal cognitive processes (Frey & Lupart, 1987; Liben, 1987a).

Finally, Ceci and Liker (1986) describe a "contextual account of intelligence" (p. 138), best indicated by how people cope with the environmental challenges that occur in their lives. Their research has shown that:

> Each of us possesses innate potentialities for achievement in abstract reasoning, verbal analysis, creative expression, quantification, visual-spatial organization, and so on . . . . Additionally, each of us is exposed to multiple contexts for expressing [our] potentialities. In the types of environments that are typically seen as "enriched," there are opportunities to develop most or even all of one's potentialities. For most, however, the opportunities that are relevant for the actualization of even a single potentiality may not have been available during critical periods of development. (p. 139)

"Practical" and "Academic" Intelligence

Scribner (1986), and Wagner and Sternberg (1986) contrast the "practical thinking" and "practical intelligence" that characterize day-to-day activities with the "academic" or "formal" thinking that is usually done in school. Practical intelligence is the cognitive activity that enables people to complete complex everyday tasks and to carry out their daily routines. It is put into context in real-world challenges that determine both the perception of problems and how their solutions are shaped. Requiring flexible styles of knowing and thinking, practical intelligence uses an array of abilities that may be unrelated or even antithetical to academic performance (Brown, Collins, & Duguid, 1989; Rogoff & Lave, 1984). Adaptive functioning relies on practical intelligence at home, in school, or in the marketplace, and it reflects a person's capacity to use the environments and its available tools to learn. Adoptive functioning requires invention and creativity and the ability to integrate flexibly information from both inside and outside immediate problems, including environmental cues and the goals and interests of the problem solver.

Academic intelligence, by contrast, is a formalized response to problems posed in classrooms and school, in examinations, or in a psychologist's office (Ceci & Liker, 1986). Neisser (1976), and Wagner and Sternberg (1986) characterize tasks requiring academic intelligence as follows:

- They are devised by someone other than the learner.
- They often have little or no intrinsic interest to the learner.
- At the start of a school task, all of the information needed to complete the task is usually provided.
- Tasks are separated from learners' everyday experiences.
- The tasks usually assume there is a well-defined and preset correct answer.
- There are a limited number, usually one, of correct methods for finding the solution.

o Tasks are uniformly presented in written symbols, using words or numbers.

Such circumscribed activity is uncommon outside of school. Children rarely apply school learning to the problems they encounter at home; and, in school, they learn to use the "tools" of the disciplines--the formulas of mathematicians, the dictionary of the writer, or the procedures of scientists--but there is little opportunity to practice informally school mathematics, writing, or science. Unfortunately, the inauthenticity of the school context distances the work done in school from what children learn is necessary in their environment, making it difficult to interrelate thinking and problem solving across the two contexts (Brown, et al., 1989).

Another limitation of many school tasks is the expectation that a relatively small proportion of learners will reach the highest achievement levels. "Grading on a curve" is an antiquated custom that assumes a substantial portion of the curriculum will be mastered expertly by only a few students. Although both practical problems, like school tasks, are uncertain, and they often demand insightful analyses of a multitude of complex variables, no upper limit is assumed in children's use of coping skills within their personal and social world. When, for example, children want to meet with friends, go to the grocery store, get access to a forbidden cabinet, or obtain assistance in an emergency, they can devise a plan, employ strategies, and be analytical. These accomplishments may be more easily achieved by some children than their school assignments, however, because their motivation to achieve success is usually higher, and they typically encounter these tasks in familiar contexts. The challenge for schools is to find the connections between practical intelligence and the school curriculum, so that children can build upon and use the intelligence developed in school, as well as out of it.

Researchers are rapidly accumulating evidence to demonstrate that the basic intelligence most of us have can be productively directed into various cognitive activities, depending largely upon individual opportunities and motivation to succeed. We have moved from the original absolute and standardized notion of intelligence to one that is socially and contextually defined (Goodnow, 1986). Examinations of how children's minds function in practice expands thinking about and understanding of all of their behavior. It also challenges the assessment measures we use, the contexts in which intelligence is evaluated, and statements about who is the "brightest" in a class.

The narrow range of measurement tools, procedures, and situations typically employed by schools limit what we know or can learn about children's intelligent behavior. The effect is that the intelligent behavior highly valued by society but not measured does not get validated in schools and, often, is not well developed among children. Most notable of these neglected tasks are spontaneous organizing and planning, analysis of logical errors that reflect "intelligent" miscues or mistakes, and negotiation and collaboration skills, all of which are increasingly essential capacities in our society (Presseisen, 1987).

Engaging children's intelligence in school. Intelligence gained from learning in context sheds light on why we see such a range of strong and weak learners in classrooms, each child with practical but, for a school environment, often incomplete theories to explain what she encounters. Redirecting educators away from children's apparent deficits, encouraging them, instead, to examine how children create their own functional theories, enables teachers to recognize the value of practical intelligence and to translate its use to academic tasks.

If learners construct their understanding, even on the basis of incomplete information, then the teacher's role is to guide children in reconstructing their conclusions so that they rest on accurate and complete information. Children are already skilled in recognizing familiar relationships, but they will need help in interpreting and reasoning about new ones. Finally, since learning depends on prior knowledge and experience, teachers must present their students with opportunities to link what they already know and have interpreted to newly available information required for academic proficiency.

Resnick (1987a, 1987b) has described the teacher's role as one of helping students confront their naive theories, determine their flaws, and build new analyses and structures of knowledge. Pitting students' existing ideas against the new concepts that they must learn is a practical task, not unlike those that children and adults face outside of the school every day.

Analyzing and helping children adjust and reframe spontaneous meanings are quite different processes from those ordinarily taught through directed lessons. No longer mere disseminators of information, now teachers are guides and mentors, helping students connect subject matter content and theory to their own experiences. Through detailed observation of children's thinking and action, teachers identify the flaws in students' naive theories and carefully help them see their own logical errors. Examples and experimentation based in students' experiences situate their knowledge in practical contexts. Once knowledge frameworks and concepts are put into context in this way, the process of teaching the traditional academic disciplines, including their most complex principles, is rewarding for both child and teacher.

Good examples of this kind of teaching are found in the mathematics and science procedures advanced by numerous councils and review boards that have recently examined the state of mathematics and science teaching (National Council of Teachers of Mathematics 1989; American Association for the Advancement of Science, 1989). These two professional organizations, especially, have taken a strong stand that advocates teaching in context more fully. The latter writes,

> People have to construct their own meaning regardless of how clearly teachers or books tell them things. Mostly, a person does this by connecting new information and concepts to what he or she already believes. Concepts--the essential units of human thought--that do not have multiple links with how a student thinks about the world are not likely to be remembered or useful. (p. 145)

Developmental Characteristics in Three Phases of Childhood

Educational programs that enable children to prosper within a world of social change are rooted in an integrated theory of learning and development. This means grounding pedagogy in advancing knowledge about children's developmental characteristics. Examples of such responsiveness are described in the following overview of cognitive and social growth that occurs during the elementary and middle school years (Note 2). Appendix A summarizes the core characteristics of each age group.

The primary years--ages four to seven. When children enter school, whether at four or five years of age, their cognitive capacity has already achieved considerable complexity, but their logic structures are still immature. Children's continuing productive development depends on concrete physical experiences, vigorous social exchanges with peers around realistic problems, and thoughtful adult guidance. Variability in the quality of children's interactions with teachers, parents, other care givers, and peers at this age significantly affects later development.

Between the ages of four and seven, children's inquisitiveness and yearning to become part of a group foster a new independence and potential for responsibility that is extended by the cultural expectations and traditions in their homes and communities. Children's physical capacities enable them to become fuller citizens within their communities. They can dress and care for themselves, follow simple instructions, gather and use the tools or objects they need in work or play, and participate in decision-making and planning. Physical and intellectual advances enable children to become increasingly independent and goal-directed. Their independence acts reciprocally with the expanding expectations from home and school, and it is now more nearly possible for children to engage in organized play and to profit from formal instruction.

Interpersonal communication, the starting point for building relationships, is of primary interest between ages four and seven. Children are gradually learning to understand others' perspectives, thereby becoming more effective communicators and listeners. They can make sounder judgments, can more readily distinguish between appearances and reality, and can construct and follow the logic of rules. These are all skills necessary to operate successfully in social groups.

As a result of these attainments, peer culture is increasingly influential in the primary years, and learning is most dynamic and personal when children's desires for social interaction are nurtured and enlisted as pedagogical aids. Children are fascinated by language and stories, and, given the opportunity to weave language into their experiences, they spontaneously and unabashedly dramatize their fantasies and play out world views. They also write freely, if permitted the freedom to express themselves without undue constraints of rules and modification.

Similarly, from a young age, primary school children establish a logical sense of numbers, patterns, and arithmetic relationships. In the first years of school, they figure out workable rules and theories about numbers. However, their theories are often flawed, and they may need to be "debugged" (Resnick & Ford, 1981) and repaired before becoming fully usable. This connection is accomplished most effectively through guided experimentation and construction that dislodges and replaces the "buggy rules" with new, more reliable and mathematically accurate ones.

Parents continue to exert the strongest influence on children's participation with groups, whether in the community, at school, or in after-school programs, and social contexts continue to have enormously varied impacts on what children learn and where they learn it. Cultures and communities within cultures use these years in different ways, offering more or less structured and formal social and intellectual guidance. In the United States, for example, preschools were long the luxury of a small wealthy elite. The changing working and social patterns of families have made all-day programs to care for children more commonplace. Many policy makers now consider day-long schools a significant, basic, social need shared by all sectors, but especially necessary for young children without a primary care giver available to supervise their time at home (Hamburg, 1987; Shanker, 1987; Ziegler, 1987).

The middle childhood years--ages eight to ten. Called by Eric Erikson the "age of industry," the years from eight to ten are a time when children have developed keen interests in objects and ideas and become intensely involved in the materials and activities in their surroundings. In this era of especially vigorous physical growth and coordination, children readily test their developing and changing capacities against challenges that combine their physical strength and their imaginative and spontaneous play with peers. Especially when they can join with others, both older and younger, they teach and learn the childhood games and lore that have been passed on for generations within communities and across cultures.

Social growth, along with sexual and ethnic identity, deepens during the middle years, and peer groups become more important than before. Cognitive skills, enriched by a broadened knowledge base, expand to include increasing abstraction and logical complexity. After age eight, children are usually more receptive to learning complex information with substantive content. Consequently, middle-grade schools can become a more potent social and intellectual influence.

Social development is dominated by fascination with rules—moral rules, social conventions, and personal codes. The deference to authority characteristic of the younger years is replaced by a willingness to challenge adult authority and a growing interest in reciprocal relationships. Friendships emphasize shared interests, mutual understanding, and trust. Developing abilities to adopt other's points of view and to argue and debate lead children to take their friendships—often now segregated by gender—increasingly seriously. Social differentiation in peer groups, according to special interests, or in family or community associations creates preferences, "in" and "out" groups, and increases the potency of popularity and social comparisons.

By the middle years, children are aware of their community, enlivened by questions about its well-being, and willing to examine some social issues such as concern for environment, health, or safety. As a result, the content of school learning can and should provide substantive depth and breadth. Children's competencies are strengthened by the use of their creativity and imagination. Such experiences enable them to expand their knowledge, especially through experimentation. Their social and intellectual emergence also stimulates their interest in taking responsibility for functionally meaningful tasks at home, in school, and in the neighborhood.

At ages eight to ten, children's conceptual abilities are well advanced beyond those they began school with, but they still have difficulty abstracting beyond their concrete experience bases. In these middle years, children begin to gain facility in using mental strategies to combine, separate, reorder, and transform objects and ideas in their minds. Their language is well developed for social use; they have a difficult time with concepts not based on personal experience. This ability develops earlier and faster in the physical than in the social sciences (Cohen, 1972).

Eight- to ten-year-olds' skills develop best if their intellectual probing and exploration build upon problems that use familiar materials and tools to encourage enthusiasm and motivation for continuing to learn. This implies a program that is both child-centered and guided by a firm adult hand. While their intellects have to be nurtured on content that holds interest for them, the most appropriate content "refers to that portion of adult knowledge which can be conceptualized and responded to emotionally by children, so that it is meaningful to them as well as held significant by adults" (Cohen, 1972, p. 245).

Early adolescence--ages eleven to fifteen. The social and moral fabric of school is important throughout children's growth and development, but, during early adolescence, socialization is an especially important theme. These are the critical years in which young people's prior experiences coalesce into an integrated identity and personality. If their beliefs, abilities, and desires are to be reconciled healthfully with adult and community norms, this is when it occurs. "Education for a well-spent youth" is how James (1972) describes society's obligation to its young adolescents. But how to accomplish this in an uncertain and shifting world is especially puzzling.

Young adolescents step up their searches for identity and personal value as they begin the dynamic physical changes associated with the onset of puberty. Between the ages of 10 and 15, their bodies grow at a more rapid rate than at any other time since infancy, developing both primary and secondary sexual characteristics and reaching approximately 98 percent of their eventual adult size (Tanner, 1978). Their physical changes are immensely personal, affecting their stature, shape, and appearance. This also can be especially unsettling because the changes happen at varying and unpredictable ages among individual children, spanning a five- to six-year period.

For girls, the age of rapid growth starts as early as 10 1/2 years with a height spurt, usually followed by breast development and menarche, beginning, on average, among 12-year-olds. For boys, the spurt begins about a year later than for girls and peaks at about 14, leaving them broad-shouldered, heavier, and taller, with mature sexual organs, unfamiliar voices, and changing facial features (Tanner, 1987). During this period, children become able to bear children. Consequently, access to accurate information, offered at the right time with warmth and affection, is especially crucial.

The social, emotional, and intellectual developments coinciding with the physical changes that occur make this era a very perplexing one, both for children and for the adults around them. The psychic metamorphoses that youth experience feel intangible and difficult to talk about, and self-consciousness is constant. Feeling quite alone, many young people suffer disturbances in self-esteem and understandable feelings of disequilibrium.

These changes evoke a period of normal self-centeredness, even as they herald increasing logical abstractness and intellectual flexibility. Once considered a time of abnormal tumult and aggressiveness, early adolescence, we now know, is continuous with other periods of growth (Elkind, 1974). The search for gender identity, combined with readiness for independence that parallels physical and mental developments, encourages young adolescents to seek out stronger bonds with their peers. Family, however, remains the strongest guiding force in young adolescents' lives, even when the interactions with parents are uneven and sometimes strained (Steinberg, 1989). In some instances, questioning parental authority combined with increased bonding to peers leads young people to experiment with extreme, even risky, social or sexual behaviors that are worrisome to parents and adults. Such behavior, however, is characteristic of about the same proportion of youngsters in this age group as in the general population (Offer, Ostrov, & Howard, 1981).

The critical challenge of early adolescence is to integrate emerging sexual capacities, new social relationships, and developing personality characteristics to affirm a mature identity that encourages continuing attachment to home and community. The cognitive advances of this period open a panorama of opportunities--too often unused by schools--for building significant new connections among children, peers, and home and school worlds. The key intellectual advance at this time is in the early adolescent's new conceptual flexibility and increasing ability of abstract logic, until now unreliable and bound to practical experiences and physical objects. Gradually, through their varied social, personal, and intellectual experiences, young adolescents learn to juggle several alternative possibilities, think ahead, scrutinize their own thoughts, and look beyond immediate limitations, hypothesizing options and alternatives.

While thought processes mature, however, real, concrete experiences from which to generate and manipulate ideas continue to be the necessary grist for the intellectual mill. Demonstrating concrete solutions to hypothetical problems is not just a crutch to lean on. Demonstrations enable youngsters to comprehend and to define the constructs and the logical structures upon which they are learning to rely. But the powers of logic emerge gradually, over many years, and they are shaky and uncertain until well-practiced. Thus, to make sure that mature cognitive processes take root, responsive middle-grade classrooms encourage debate, discussion, and group interaction around new interactive technologies and scientific experimentation, as well as traditional communication forms such as reading, writing, and problem solving.

The program required for young adolescents' healthy development must be intrinsically interesting, involving young people in large-scale projects that inspire connection to their peers, as well as to the learning enterprise and the community. Schools that nurture students' talent and dedication promote work in small teams with peers and adults and value evidence of autonomy and creativity (Lipsitz, 1984). During the early adolescent years, young people who grapple seriously with the unknown learn well how fleeting is factual knowledge and expertise, and, thus, they are prepared to face what lies before them. In our present and future world, it is no longer possible to "induct young people into agreed-upon certainties," suggests James (1972); "we have to coopt them into uncertainty " (p. 43).

Developmental Continuity in Children

In spite of the variability in physical, cognitive, and social capacity between a preschooler and a young adolescent, the mechanisms for stimulating and expanding learning across the years are the same. Children's developing characteristics suggest the following set of psychoeducational needs (expanded in Appendix B):

- Psychological safety: a sense of personal and emotional security attained through exploration and understanding of one's self in varying contexts.
- Esteem and self-worth: a realistic self-perception acquired through significant connections to and achievements with family, community, and peers.
- Connectedness with adults and peers: sustaining relationships that bind children to the people around them.
- Caring guidance: authoritative and clear support that makes room for children's exploration of the unknown, encouraging and structuring the process.
- Intellectual competence and achievement: opportunities that enable children to explore and test their developing intellectual strengths and demonstrate complex achievements in changing cognitive, social, and artistic contexts.
- Applied and varied learning experiences: experiences that enable children to assign meaning to them by exploring the limits of their curiosity and creativity.

- Role models and values: adult and peer models that affirm unswervingly the community's moral values and commitments and encourage in children the conviction to do the same.

The educational program implied by these characteristics and needs of children is perhaps best described by B. Biber (1984) and her colleagues at Bank Street College as "developmental" and "interactionist" (p. 65). The developmental component emphasizes children's emerging patterns of intellectual, social, and emotional growth.

Interaction has two dimensions. The first is the exchange between children and their environments, including adults, other children, and the material world--the cognitive and content-specific "stuff" of learning. The second is the interaction between cognitive and affective aspects of self. An education that is simultaneously developmental and interactionist attends both to the environment and to the children, to the collaboration and colearning between child and setting (Fischer & Bullock, 1984). Structured to respond to the full range of children's psychological and educational needs throughout their school years, it aims to establish continuity for learning between home and school.

Finally, schools must also accommodate three other critical aspects of learning: (a) the integration of the whole child--artistic dimensions; feeling connections; individual complexities and uniqueness; and variation across cultures; (b) the intricate ways in which children are motivated to strengthen their emerging skills and their connections with their families, peer groups, schools, or communities; and (c) the different ways children are socialized, how slow the process is, how painful it often is to learn right and wrong, and how difficult it is to develop a conscience that evolves into a system of ethics.

This list is demanding, but all ingredients make up the learner, and, therefore, they must become essential elements of the professional practice schools that nurture children's sense and meaning making.

Implications for Classrooms and Schools

The Responsibility of Schools in a Culturally Diverse Society

By the time children begin school, they are experienced conceptual organizers and thinkers. Building on their earliest interactions with the environment, they acquire knowledge of their world through efforts to mold, rework, and construct its meaning. What children learn is crafted out of the interplay between their developing capacity for self-aware and goal-directed thought and their prior cognitive and sociocultural experiences (Belmont, 1989; Linney & Seidman, 1989). Intellectual and personal development is influenced by prior learning and exposure to information, as well as by family history, ethnicity, language, and social class. The key point for schools is that while cultural differences in observable cognitive behavior affect children's reactions to school learning, these differences are fundamentally rooted in practical knowledge and situation, both of which are highly malleable (deLone, 1979).

School programs that respond sensitively to situational and cultural diversity are integrated with the rest of students' lives, in a mutually supportive school and community environment. Successful teachers affirm and respect students' individuality through skillful diagnosis and analysis of their entering knowledge base and working theories and by embedding instruction in what is familiar. Such teachers solicit and use parental advice about children's learning styles and interests and include parents as partners in guiding development.

Teachers and parents can facilitate the transition between home culture and school settings in several ways. The Laboratory of Comparative Human Cognition (1983) identified four of them:

- Provide the specific information children need to understand and to feel comfortable in each new context they experience.

- Assure that children encounter this information in the same basic context until they can use it to serve their further learning.

- Connect children's different significant environments with one another so that the environments help youngsters identify with and feel a sense of involvement and satisfaction in each.

- Control and structure the level of difficulty within each new context, modifying it so its information is most accessible.

To these, Linney and Seidman (1989) add two others:

- Focus on the interaction processes within the total environment, carefully avoiding labeling children or adopting attitudes that "blame the victim."

- Respond to the whole child, concentrating on supporting social and emotional development as well as cognitive growth.

When cultural diversity is genuinely respected, educators value racial and ethnic variability, listen for students' idiosyncratic responses, and accommodate the community's special languages and circumstances. Such teachers recognize that adjusting the school program to students' individuality and experience benefits all and enhances the overall quality of education.

Ellen Pechman

Mediating Learning in Classrooms Sensitive to Learning Diversity

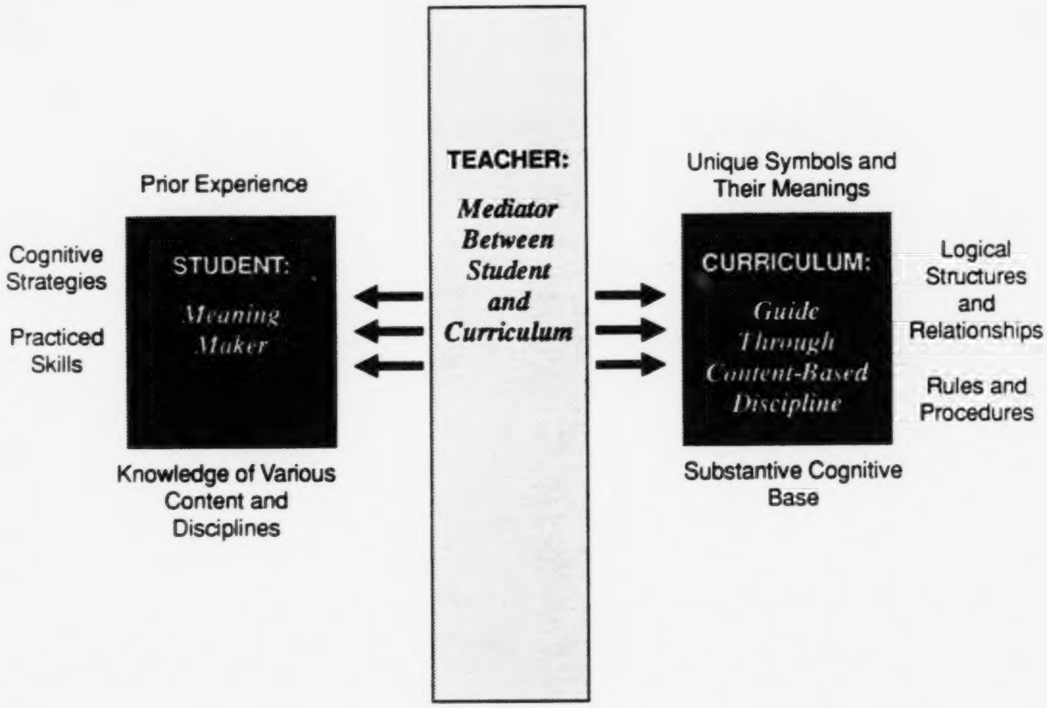
Mature, effective learners are self-aware and capable of using goal-oriented strategies deliberately (Bransford, Vye, Adams, & Perfetto, 1989). They develop maturity by working with teachers who relinquish their role as dispensers of knowledge and focus instead on how students think and on how knowledge develops, not simply on what students do or do not know. Such teachers help students connect their prior experiences and cognitive strategies to the curriculum's specific subject areas (Note 3). This approach builds necessary understanding of emerging thinking processes and simultaneously helps students learn to apply vital mediation techniques to the content within the disciplines they are studying. Figure 1 depicts the flow of this exchange between the student and the curriculum through the teacher.

When teachers mediate skillfully between learners and the curriculum, they combine several significant roles. They diagnose, facilitate, and model. They are motivators and guides. They encourage students to broaden their "courage spans," enabling them to accept failure as a temporary false start that can be overcome and to inspect errors for the useful information they provide (Brown, 1989). By teaching children to be productive critics and analysts of their own actions and learning, teachers instill self-motivation and an orientation towards mastery (Ames & Archer, 1988) that inspires their continuing willingness to "mess about" (Hawkins, 1970, p. 38) and to explore the "having of wonderful ideas" (Duckworth, 1987, p. 1).

Learners spontaneously attribute their own meanings—meanings born of context and experience—to the symbols and relationships they observe; but it is up to the teacher to assure that students' interpretations are consistent with the rules and principles of the formal disciplines they study. Practical experiences that connect prior understandings with the school curriculum extend children's breadth of knowledge and improve the

Figure 1

Role of Teacher as Mediator


Prior Experience
Cognitive Strategies
Practiced Skills
STUDENT:
Meaning Maker
Knowledge of Various Content and Disciplines
TEACHER:
Mediator Between Student and Curriculum
Unique Symbols and Their Meanings
CURRICULUM:
Guide Through Content-Based Discipline
Logical Structures and Relationships
Rules and Procedures
Substantive Cognitive Base

accuracy with which they use the logical rules that are the bedrock of each academic domain. Good learning situations encourage children to establish their own plans for how to reach a goal and leave them wide latitude to follow their own intuition about how to get there. This process is not unstructured or free-floating, however, because the teacher plays a critical and active role. Having put students in contact with a field of study, the teacher helps observe and record what is new and interesting. With practice, the power of students' logical authority matures as does their ability to manipulate the substantive content in various curriculum domains. While students are learning to explain the sense they are making from their new intellectual encounters, the teacher listens attentively, seeking an understanding of the meaning students are constructing.

Lampert (1985, 1989) provides an example of the multilevel instructional process she uses to connect students' naive theories with the formal knowledge of her discipline, mathematics. Often working collaboratively, students begin by learning how to represent numbers in words, in diagrams, and with symbols from life. After they can demonstrate numerical relationships with physical symbols, they write about and discuss their findings with one another. Next, children learn how to select the appropriate mathematical ideas to make comparisons and to derive results from their analyses. Students solidify their knowledge by practicing the use of their tools in parallel contexts.

When they have grounded the number concepts in their own terms, students try to adapt their new mathematical understanding to original problems. At this stage, students fix their knowledge by inventing applications of the concepts they've learned, using concrete objects and real mathematical problems throughout. This process engages children in the logic of the discipline's content, and they learn to present coherent arguments for how they reach their various solutions. Lampert further strengthens and tests students' ownership of their knowledge by encouraging each to challenge another's logic, expecting both challenger and defendant to use well-structured mathematical thinking.

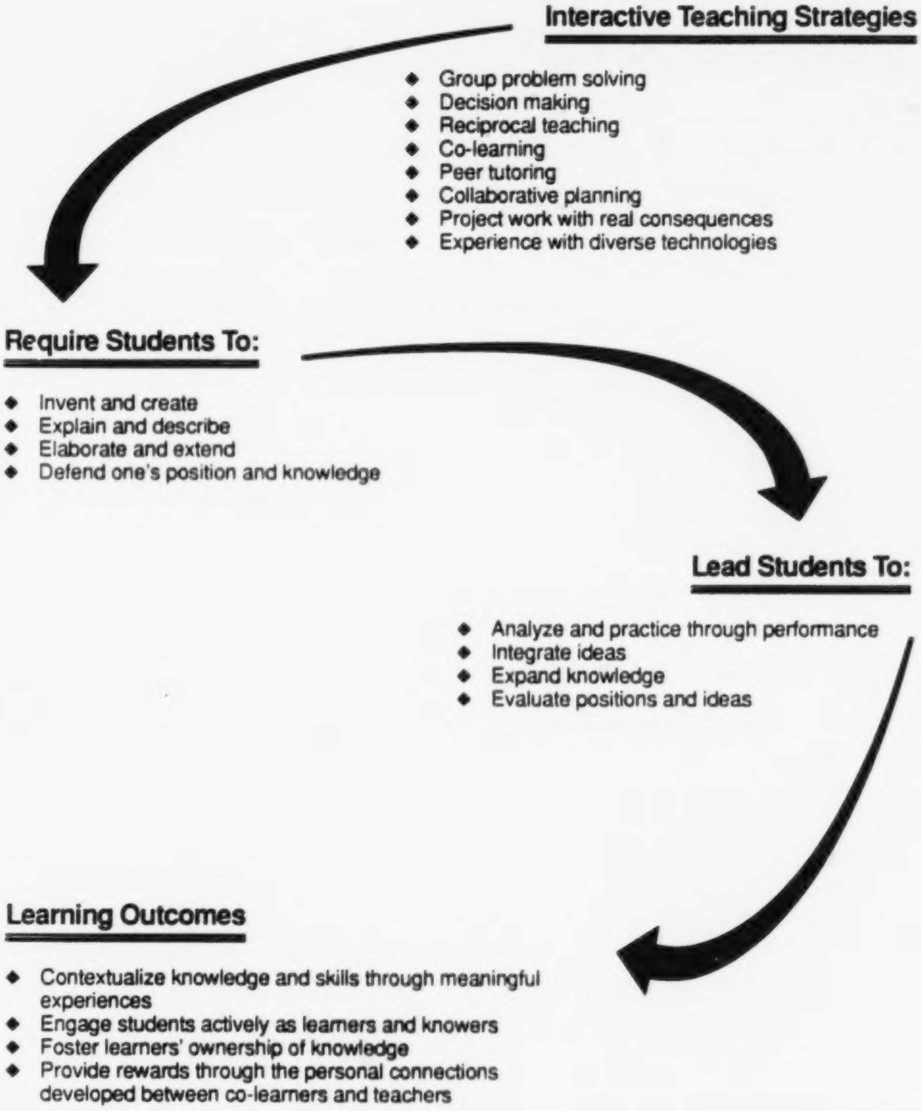
This is reason-based teaching and learning. It contrasts with the authority-based structure that has been the traditional hallmark of schooling. Two elements differentiate the first from the second. First, students work with realistic problems and explore a multitude of meaningful applications and representations. Second, students are involved in a social process in which the multidimensional dialogue that occurs--among students, among teachers, and between teachers and students--becomes part of the meaning they create. This discourse-centered learning brings children closer to what it means to participate in a discipline as a doer and a thinker. "The task" summarizes Glaser (1984), "is to produce a changed environment for learning--an environment in which there is a new relationship between students and their subject matter . . . . As individuals acquire knowledge, they also should be empowered to think and reason" (p. 103).

When education is driven by students' inquiry and investigative capabilities, teachers' methods are interactive and diverse. Students explain, describe, elaborate, and defend their points of view and their evolving knowledge in a range of representational contexts (Cazden, 1988). They learn by using numerous methods, modalities, styles, and technologies (Siegler, 1986). Activities occur in varying settings inside and outside of the classroom or the school. Teachers expect students to use both oral and written language. Reciprocal instruction (Palinscar & Brown, 1984), where teachers and learners exchange roles, reinforces learning by beginning with specific verbal and analytical directions and gradually moving to applications that the learner undertakes independently (Bransford, et al., 1989). Most important, increasing use of cooperative activities such as groups, games, planning teams, and project work, encourages colearning, analytical processes, decision-making, and problem solving (Slavin, 1989; see also Presseisen, 1987). Figure 2 (below) depicts the relationship between interactive strategies and learning outcomes that are mediated by a students' thinking, elaboration, and analysis.

By directing students to explore new content domains that they would not spontaneously encounter, the school can play a critical part in molding and expanding intellectual development and in achieving valued social goals. The teacher's long-term objective is to strengthen learners, assuring that their students learn to use and build upon their store of information and existing cognitive know-how. This is not laissez-faire instruction, and it does not give children exclusive control over what or how they learn. Instead, responsibility for learning results from the interaction between the individual child and the strategically shaped environment that the teacher thoughtfully and skillfully establishes.

The outcomes of inquiry-driven instruction are accumulated portfolios that provide evidence of students' work. Standardized and group test scores have a place only in the diagnostic process at a policy level, to enable reflection on the broad themes of a school system's accomplishments. In evaluating individual progress, however, it is essential to show the student's practical facility with subject material in numerous contexts. The reward structure emphasizes the intrinsic value of learning through the personal connections peers and their teachers make as they join in a colearning venture. The "products" of this learning are successive applications of knowledge and the accompanying sense of competence and esteem that comes with new achievements.

Figure 2
Connecting Teaching Strategies with Learning Outcomes



Interactive Teaching Strategies

- Group problem solving
- Decision making
- Reciprocal teaching
- Co-learning
- Peer tutoring
- Collaborative planning
- Project work with real consequences
- Experience with diverse technologies

Require Students To:

- Invent and create
- Explain and describe
- Elaborate and extend
- Defend one's position and knowledge

Lead Students To:

- Analyze and practice through performance
- Integrate ideas
- Expand knowledge
- Evaluate positions and ideas

Learning Outcomes

- Contextualize knowledge and skills through meaningful experiences
- Engage students actively as learners and knowers
- Foster learners' ownership of knowledge
- Provide rewards through the personal connections developed between co-learners and teachers

Diagnostic teaching. Diagnosis is a strategy for identifying and teaching within a child's "zone of proximal development," the appropriate place between the lowest level of current achievement where the child works independently and the upper limit at which the child learns in close collaboration and guidance from the teacher (Vygotsky, 1962; Wertsch, 1985). The responsibility for performance and practice is the child's, who acts, however, from the impetus of progressive explanations and hints from the teacher. Teachers' well-formed queries enable children to reconstruct and verify their accumulating knowledge until it can be applied in novel contexts. The effectiveness of diagnostic teaching relies on teachers' analytical precision and on their ability to construct the experiences, hints, and demonstrations that gradually move children along curriculum sequences (Leinhardt, 1989).

The art of this diagnostic process is to strike a subtle balance between passively waiting for students to become ready to learn and actively stimulating learning. Even when adults provide such explicit clues that children are virtually given the answer, the collaboration itself instills the faith that is so vital for them to continue to invest in learning (Brown, Bransford, Ferrara, & Campione, 1983). This clinical teaching process is neither objective-based nor book-learned. It comes from reflective pedagogical practice, undertaken in an environment where teaching and researching are one and the same, both used to craft and hone workable pedagogies that respond expertly to children's understanding (Duckworth, 1987).

A focus on language development. Speech and language frame the context for learning and thinking. Children's earliest interactions with their environments are formed by the oral language traditions in which they grow. Through language, communities transmit their rules, behavioral expectations, and role relationships. Language forms express the common value system and the norms of family and community networks. As such, language is enabling when it is consistent with what is used by others in the environment, but when the home vernacular differs from the school's, the communication barriers that emerge can be formidable (Cazden, 1988; Heath, 1989).

Language development in school begins informally through conversations that introduce learners and teachers to one another. Language has great potency at the personal level, in classrooms, and in discussions with parents, and there are many styles and uses to be explored. To assure smooth communication between students and teachers and between teachers and home, schools must deliberately structure open and exploratory uses of language with children and their parents. Where cultural differences are a potential barrier to communication, informality is even more critical to promoting candor and collaboration between home and school (Cazden, 1988).

Mastering the language of school is for many children an essential first step toward developing the mutual understanding and trust that enables learning. Similarly, however, when teachers learn the language of the child's home and community, they gain a perspective that enables them to structure their teaching according to their students' vantage points.

Alternative classroom organizational structures. Manipulating classroom organization while holding class size constant is one effective approach to improving the quality of interactions between students and teachers. There are many ways changes can be accomplished. Class size can be adjusted for specific activities and lessons by asking paraprofessionals, volunteers, and older students to lead working groups in various contexts and to serve as mentors to students. Cooperative and peer-directed lessons also promote problem solving and high levels of cognitive response (Slavin, 1989; Slavin & Madden, 1989).

Studies have consistently shown the limited value of traditional didactic instruction unless it is modified and paced to accommodate diversity (Cole, Griffin, & the Laboratory of Comparative Human Cognition, 1987). When teachers lead whole classes, whether clustered heterogeneously or by ability, they can expect a wide range of performances. Thus, teacher-led groups should change according to instructional goals and students' needs. Flexible, variably paced lessons that incorporate technology, real-life problems, and manipulative materials are constructive pedagogical tools in these circumstances. Also, when in-class instruction is adjusted for students' individuality and provides opportunities for student interaction, teacher-led lessons are optimally effective (Meece, Blumenfield, & Puro, 1989; Stodolsky, 1988).

Experimentation with alternative grouping practices and organizational structures in schools is increasingly widespread. For example, Gardner (in press) proposes to mix techniques that simultaneously engage a number of students' developing intellectual strengths. In "flow centers," students tackle problems of personal interest and pursue them to completion. An apprentice system brings together children of different ages to work on activities in which they have special interest or skills. "Domain projects" teach concepts and skills in given art forms--rehearsing a musical piece, developing style in the visual arts, or writing dialogues for plays. In each case, the projects are exercises that stress production but simultaneously call for reflection and analysis en route to the completed performance. Versions of these strategies are also used in a cluster of middle-grade schools directed by Ann Ratzki in Cologne, West Germany (AFT Staff, 1988), and by American middle (Lipsitz, 1984) and high schools (Coalition of Essential Schools, 1985; Oxley, 1989) experimenting with organizational patterns that place students in more intimate and personalized learning settings.

Gardner (in press) also speculates that an effective alternative school organization would structure students' educational careers around several "cycles of emphasis," shifting the instructional focus at various times in the child's life span. The initial years of school, for example, might foster creativity through exploration and free choice. The first formal education would begin after the age of eight and would increase the focus on skills and knowledge in a common curriculum core. From high school through the undergraduate years, there would be electives and cross-disciplinary courses, offering a number of formats for in-depth investigation. A period of professional training would round out youngsters' educational years, enabling the fullest probe of options before students need to determine their specialized career paths.

Classroom organization provides the context in which teaching and learning occur, and the context is pivotal in determining the quality of students' learning. This area of research is receiving increasing attention, and the interest has generated a range of theoretical perspectives that are being examined attentively (Slavin, 1989). No single approach or set of approaches emerge as appropriate across all settings; however, alternative grouping practices optimize the amount and quality of time students devote to learning.

Thinking skills strategies. Cognitive psychologists have begun to examine the differences in the efficiency of students' learning and to argue that metacognitive strategies can be taught to strengthen achievement (Bransford, et al., 1989; Frey & Lupart, 1987; Siegler, 1986). Researchers find that, while some people are more effective than others in using learning, remembering, and thinking skills, variability in strategic use is based on prior experience, not on native talent, and is amenable to instruction. Two common barriers to students' effective use of strategies are: a lack of general knowledge about how to analyze and apply information within a particular content domain (e.g., science, math), and an inability to activate existing thinking or language skills when they need them.

Bransford, Vye, Adams, & Perfetto (1989) and others (Perkins, 1986; Perkins & Simmons, 1988; Presseisen, 1987) have developed training procedures to improve learners' use of information and to evaluate how appropriately they engage, when necessary, available strategies. These educators focus on teaching children how to be "intelligent" novices, providing students with tools for efficiently acquiring new information on their own.

Recent work on domain-specific problem solving reveals that, while generalizable thinking processes can be developed, their transferability and application relies on knowledge of the content area in which they are to be used (Alexander & Judy, 1988; Eylon & Lynn, 1988). Thus, proficiency in thinking and organizing knowledge is dependent upon content, and individuals with an inadequate knowledge base are inefficient users of their information-processing strategies. The pedagogical implication of this fact is that inquiry teaching and strategy building are most beneficial when they are applied within subject areas.

The role of technology. Interactive computer, video, and telecommunications technology are relatively new factors in the teaching and learning equation, and their potential is vast but poorly understood and too infrequently tapped (Note 4).

Three factors influence the slowness with which technology has been introduced and used forcefully in schools. First, when innovative technology appears, it is expensive, and often the earliest versions are replaced by successive improvements that render the first technology quickly obsolete. Second, technological advancements require new learning, eventually by students, but first by teachers and curriculum experts, to determine how to integrate it with existing and cherished "basic" educational programs. Third, schools are inherently conservative about altering the curriculum and the way they structure teaching. An underlying ideology suggests that students must learn the traditional curriculum content before they advance to modern modes of thinking or new content. This point of view is prevalent, in spite of available evidence that shows computers promote complex thinking and coordinate advanced multilevel problem solving (Cole, Griffin, & The Laboratory of Comparative Human Cognition, 1987).

These barriers are particularly unfortunate because technological advancements dramatically shift the organization of classrooms and schools. Technology can expand the resources for instruction and student interaction well beyond the classroom and school doors. New technologies, such as computers, united with older technologies, such as television, can together creatively alter what is considered basic in school learning. In restructured schools, designed to support the active learner and to increase the flexibility of instructional opportunities and processes, advanced technology will play an instrumental role. The challenge is to select technology carefully so that it advances students' development and thinking without displacing or disrupting the workable teaching and learning systems already in place.

An additional but formidable problem of technology use is how to realize its potential among minorities and those now underrepresented in the fields where these modern tools are employed most. It is essential to coordinate the distribution and classroom use of technological resources so that they serve all sectors of society without leaving some groups further disenfranchised educationally.

Ellen Pechman

Professional Practice Schools and New Paradigms of Learners and Learning: School as a Center of Continuity

Research from a number of academic fields discussed in this paper has converged around a renewed understanding of children's learning as a highly personal experience that occurs best in responsive social contexts. Advances in pedagogical research have also shown how intellectual growth is fostered by teaching strategies that enable students to collaborate with people and materials, using their inventiveness and creative know-how to work analytically and practically with the curriculum. Learning processes that increase the students' sense of ownership of the knowledge they gain can build competence and self-esteem, and, most important, bind students more strongly to the learning process itself (Note 5).

It is evident from this consensus about the nature of learning that, to be effective, schools must expand their role in students' and communities' intellectual and social lives. In addition to being centers of inquiry for children, schools promote learning best when they also link communities together, functioning as centers of continuity. In tandem with parents and neighbors, schools have the potential of rerooting the eroding social capital and reestablishing interconnections among individuals, families, and groups (Levin, 1988; Schorr & Schorr, 1988). Active learning environments for children are also vibrant learning centers for adults. Such places offer personal contexts where adults connect with one another and with members of the broader community not only to support children but also to enhance their own development. Important, too, is the school's commitment to model learning and inquiry processes so that parents can use them to encourage their children's connection to formal learning.

Schools that establish continuity also recreate themselves by nurturing and guiding future teachers and by developing parents' skills as teachers. A multifaceted program for children relies on novice teachers and neighborhood tutors to help maintain a varied and responsive instructional program. Master teachers demonstrate well-honed pedagogies in the routine of their regular instructional day. Their teaching is always open to question, regularly being reexamined through systematic and reflective analysis and research. Student teachers monitor and critique the work of their mentors, provide added perspectives about adjusting the instruction for students, and, as partners in the pedagogical enterprise, participate in the research and diagnosis that shapes the total educational effort.

Finally, schools become centers of continuity when they include parents as partners in the learning and teaching enterprise. Parents are consulted and involved in educational planning, and they are informed about how and why program innovations may look different from what is going on in other schools or from their own past experiences. Their perspectives and interests are solicited, and they have meaningful roles as program organizers, interpreters, tutors, and advocates. Their presence in school, observing and questioning, assures their children are not being callously "experimented with" or deprived of the "regular" program.

For all these reasons, now more than ever, schools need to become centers of community, centers of continuity, and centers of inquiry for students and teachers. Professional practice schools are designed to be such institutions and to educate teachers to work in them.

Ellen Pechman

Institutionalizing Learning-Center Instructional Practice

Alternative Models of Learning-Centered Schools

The renewed national interest in designing schools organized around a paradigm of inquiry-centered, active learning has encouraged new initiatives to reestablish model school programs. The recent examples are emerging slowly and methodically, as innovators attempt to avoid the rapid rise and fall of similar efforts during the 1960s and early 1970s (see Schwab, 1962). Several of the most prominently described programs, still very much in their earliest stages, are spearheaded by researchers implementing theoretical models related to new findings in cognition. Teams of university faculty and school-based practitioners are gradually expanding experimental models that they have seen work in laboratory or ideal school settings (Note 6). Demonstrating the possibility of educational responsiveness, especially in urban centers previously served poorly by schools, their programs share many of the following common features:

- They are learner-centered and founded on a model of the learner as an active constructor of meaning. They foster thinking, opportunities for students to use their minds against practical problems, and personalized learning.

- Assessment plays an important role in forming the educational program, but evaluation is a school-wide phenomenon, a process that involves teachers, students, and the community. A range of alternative evaluation procedures and processes assess students' progress, teachers' instruction, and the effects of the overall program. Often there is also a search for new means to evaluate student progress. A typical evaluation accumulates samples of students' work in portfolios, displays, or manuscripts, instead of using traditional or standardized tests.

- Students collaborate in learning in mixed age groups and teams that develop their logical thinking and analytical facility with interdisciplinary subject matter, and they work on projects in areas of specialized interest. Learning groups are fluid, and organizational arrangements are flexible, small, and personal. Visiting adults from the community, local experts, parents, novice teachers, and peers serve variously as teachers, tutors, and assistants in learning.

- Programs use interdisciplinary curricula where "less is more," the course material is "uncovered" rather than "covered," and students study a few central concepts in depth, rather than superficially examine a wide range of ideas and memorize facts.

- Teachers function as guides and models; they demonstrate inquiring attitudes towards knowledge and learning and avoid serving as the major source of information and expertise.

- Home and community are connected to schools in significant ways. Because children's learning occurs inside as well as outside the school walls, communities and families are integrated in the design of the education program.

- Experimental programs function in inner city contexts with large clusters of children generally considered at risk of failure or dropping out of the traditional school programs.

- Teachers have prominent roles as professionals and experts, fully responsible for determining the appropriate program for their students. They devise and direct curriculum planning, and they determine the educational structure or format for their students rather than relying on distant administrators. They are skilled diagnosticians, analysts, and researchers, and, in addition, they actively involve novice teachers in their work to assure the continuation and development of a cadre of future professional experts.

Dilemmas

Evidence from the evaluations of the hands-on and inquiry-centered programs of previous generations, especially the 1960s curriculum innovations in mathematics, science, and social studies, showed their beneficial effects (Kyle, 1984; Minuchin, Biber, Shapiro, & Zimiles, 1969; Winsor, 1973). The active "hands-on" curricula engaged students in high levels of critical and analytical thinking while improving their problem-solving skills. Inquiry courses also enhanced students' performance in other content areas, and they demonstrated improved social and communications skills as well.

Despite evidence of the success of many of these curricula, an obstacle to their continuation was that they often required extra resources of teaching time and preparation. Many teachers approved the expanded efforts, especially since the programs were so enthusiastically received by students, but, in the end, the demands on administration and time forced schools and teachers to abandon most of the innovative curricula. This does not, however, have to be the case. District- and school-level administrators can provide structural supports that protect teachers' energy. For example, districts that pay for and schedule collaboration and planning within the work day affirm teachers' willingness to tackle tough teaching problems. Furthermore, such time allows teachers to tap reservoirs of creative energy otherwise dissipated in the stress of overwork. Properly nurtured, analytical teaching stimulates community-wide intellectual commitment to learning.

The dilemma of overcommitting a small group of active and caring educators is one that has taken its toll on too many innovative programs. To avoid the disappointments of the past, professional practice schools need to care for their initiators. If the programs cannot be created sufficiently slowly and soundly with the necessary resources, then the goals should be modified or the programs postponed. Schools need the proper institutional structures--within professional organizations, teacher education institutions, and at the state, local, and school levels--to connect them to the networks and resources that will sustain inquiry-centered learning (Levine, 1988). When united in purpose, multilevel institutional commitments to this different vision of life in schools will stimulate alliances that allow such innovative but time-consuming efforts to continue.

Professional Practice Schools and Learning-Centered Instructional Practice

A changing view of the learner, a multiplicity of cultures and subcultures clustering in schools, the resulting altered roles for teachers, and different expectations for pedagogical practice call for entirely new kinds of educating institutions. Schools now teach a skill-based curriculum isolated from the ways those skills are used throughout life. Students require a more substantive and functional knowledge base that both prepares them to face practical demands and enables them to advance their own learning and society's as they mature.

A standardized organization of schools assumes that the outcome of every child's education will be a fixed body of knowledge, common to all. This model unrealistically disregards the enormously personal element in learning and the diversity of our society, both impractical and counterproductive outcomes of existing school structures. We have seen how individual the learning process is and how teaching that responds to that individuality unleashes new capabilities among learners by encouraging their active involvement in school.

Professional practice schools are envisioned as a systematic alternative to this traditional way of structuring schools. They are guided by a triple mission of supporting 1) student learning, 2) the professional education of future teachers, and 3) the improvement of teaching practice (Levine, 1988). They respond to the fundamental challenges posed by an active learner and an increasingly diverse student population in three ways.

First, professional practice schools address the goal of expanding and integrating students' knowledge by reorienting teaching so that it centers on a core of essential learning processes and strategies, rather than on narrow lists of skills. Students learn by investigating and applying procedures to solve practical problems in a sound, content-based curriculum. Furthermore, to bridge family and school cultures, professional practice schools recognize their responsibility as centers of continuity between home and school. A fundamental goal of schools must be to connect all children and their communities to learning opportunities, regardless of their ethnic, racial, or social heritage, and, in turn, to unify the communities with the larger society through what and how students learn.

The second mission of professional practice schools, to nurture the practitioner's reflective process, strengthens teachers' responsiveness to children by encouraging a continuing critical examination of assumptions about the goals and processes of teaching. Reflective practitioners, Schoen (1988) argues, are collaborative researchers and coaches, seeking to understand emerging problems and creating and testing new solutions through considered and deliberate action.

Teachers' research is systematic, intentional inquiry conducted by teachers into the effects of their work with children. It incorporates a broad view of research that hones instructional practice while it imbues teachers with a sense of professional confidence and competence. Teachers' research takes many forms--journals, essays, oral accounts, exchanges of information, and classroom studies--and it instills a sense of professional efficacy and commitment that derives from personal discovery and the sanctioned search for continuing improvement (Lytle & Cochran-Smith, 1989).

Finally, professional practice schools benefit children through their commitment to the future generation of teachers. Experts and novices together examine, reflect upon, and critique each other's work with children. The process involves closely observing the learner (diagnosis); planned intervention (strategic teaching); and evaluating the outcomes (finding what students have learned) (Leinhardt, 1989). The presence of beginning teachers also assures the influx of fresh ideas and energy to support children with special needs. In schools that are student-teaching centers, there will be enough additional adults, each supervised and monitored, to reduce student-teacher ratios and enable flexible classroom and school arrangements that individualize the educational options for all students. Such centers offer creative instructional options that might not otherwise be available.

At present, too many schools try to deliver a product--a standardized student whose years in school comprise his or her test scores, course load, and attendance statistics. By contrast, in professional practice schools, children's needs nourish the institution, which is oriented towards educational problem solving at a number of levels: on behalf of students, in support of the adult professionals, and in service to the next generation of teachers. Because research and analysis is at the heart of educational practice, professional practice schools are especially responsive to the challenges of teaching special populations, including students at risk, educationally handicapped students, and populations for whom English is not a first language.

Collegiality and collaboration in the broadest sense connect parents as partners with their children and teachers in promoting learning. Achieving this connection and trust may be one of the greatest challenges of innovative schools, because parents want and deserve the confidence that their children's education is grounded firmly in a pedagogy of certainty. Neither parents nor teachers countenance the idea of experimenting with children's educational futures. Professional practice schools, however, are not experimental. Their validity and foundation derive from the developing research base on which the instructional program and pedagogical procedures are established. These schools' willingness to inquire and make adjustment is based on the assurance that only effective instruction will survive the frequent scrutiny of many experts.

Finally, professional practice schools include parents in schools in new and more meaningful ways. As partners in educating their children, parents respond to teachers' soliciting insights and understanding. Parents' presence and familiarity with school organization promote a level of communication about children, learning, and teaching that, with the research component of the practice schools, enhances the likelihood that the educational program will align correctly with children's evolving needs.

Taken together, the three elements of professional practice schools--the use of in-depth and interactive teaching strategies, the teacher as researcher and analytical practitioner, and the expert as a model for the novice--demonstrate pedagogy at its best. Along with children and future teachers, seasoned professionals continue to learn and grow in this environment. Because they routinely analyze the effects of their practice and model reflection and learning, these teacher leaders offer children their best.

Conclusion

Children as Meaning Makers and Professional Practice Schools

Schools can be, and should be, places where people of many cultures, communities, and styles joyously work and learn--fairly, respectfully, and caringly. The evidence is clear that schools can be structured so that every child emerges into adulthood having discovered many "possible castles" and "possible worlds" (Bruner, 1986). Similarly, schools can and should be comfortable places where children realize what it means to belong and to contribute to the community of humankind.

What we know about learning and development implies that productive schools are inquiry-driven, responsive to student diversity and individuality, and structured to nurture children's powerful motivation and capacity for knowing and learning. These are appropriate aims because they are consistent with the nature of learners and with the learning process. We can not be satisfied with inadequate schools that develop the capabilities of only a small proportion of children and leave a quarter or more of the population with an incomplete education. Today's students need to develop abilities that go well beyond what is taught in a traditional curriculum. They include fluency in dealing with complex written material in speaking, reading, and writing, as well as the capacity to use these skills to learn on the job. Students need to apply quantitative know-how to new questions and to the production tools that may help answer those questions. In addition, students must learn to build and evaluate ideas and arguments efficiently.

Today's children must seek and find ways to become expert learners--meaning makers--in varied, changing, and unpredictable contexts. Because they spontaneously learn to derive meaning from the massive array of information they routinely encounter, children learn best in schools that are learner- and learning-centered, practically and intellectually active, and reflective.

This view of the learner assumes that pedagogical style, instructional activities, and open learning settings are as critical to engaging children in complex levels of thinking and knowing as is the formal content that is taught. It also asserts that all children--especially those of diverse cultural and language heritages and contexts--learn best where community-building, questioning, exploration, and problem solving are the media of intellectual exchange.

Finally, the underlying assumption of this approach is that children continue to learn when their teachers do. Teachers teach best when sustaining their own intellectual growth in a community demonstrating through its commitment that learning and change are deeply valued. The other authors in this volume explain how such environments create a spirit of perpetual learning that also nurtures the professional development and clinical education of both seasoned and new teachers. There is no better way to assure expanding learning opportunities for children than through such uninterrupted and systematic improvement of teaching.

Notes

[1] I use the concept of the child as meaning maker to capture and include numerous eloquent descriptions, written over many centuries but especially in the past several decades, of the inherent inventiveness of children. The "great books" list of outstanding descriptions of children creatively at work in schools makes inspiring, invaluable reading for those seeking to restructure schools in the 1990s. Appendix C includes a selection of my personal favorites. In the spirit of colearning, however, I urge readers also to search elsewhere.

[2] Key references for this section are Adleson (1986); Almy (1975); Almy, Chittenden & Miller (1966); Biber (1984); Bredekamp (1987); Cohen (1972); Cole & Cole (1989); Collins (1984); Eccles & Midgley (1988); Elkind (1974); Flavell & Markmam (1983); Katz (1977); Lipsitz (1984); Paley (1986); Piaget (1967); Simmons & Blyth (1987); and White & Siegel, (1984).

[3] The spring 1989 edition of the American Educator includes several articles describing recent examples of especially sensitive responses to cultural diversity in subject area content particularly those by Atwell (14-20, 45-50), Jackson (22-25), and Oxley (28-37). Cazden (1988); Gardner, Mason, & Matyas (1989); Heath (1989); Harvard Education Review (1989); and Tharp (1989) offer others. There are also outstanding examples of how community and culture were integrated in progressive schools of the early 20th century and in "open" schools in the mid-1960s. In Appendix C, see especially: Dewey & Dewey (1962); Holt (1964); James (1972); Mayhew & Edwards (1966); Mitchell (1950, 1971); Pratt (1924); Richardson (1964); and Winsor (1973).

[4] Technology, an important and complex aspect of the future of restructured schools (Educational Technology Center, 1985), receives very little emphasis in this paper because of space limitations and topic focus. Cole, Griffin, & The Laboratory of Comparative Human Cognition (1987), provide a succinct introduction to major issues and themes that affect the education of minorities and women in mathematics and science. Their reference list provides a starting point for further investigation of this issue. Lepper and Gurtner (1989) lay out the controversies surrounding the role of computers in students' learning and identify some of the difficulties of conducting research in this area.

[5] The principles of modern cognitive scientists and educators have begun to converge with the "romantic" teaching literature of the 1960s and 1970s. Many of the core ideas of the open education movement of the 1960s have become better understood and are, to some degree, validated by the experimentation that has occurred during the 1970s and 1980s. Citations in Appendix C, especially Dewey (1963), Featherstone (1971), Elementary Science Study (1970), Hawkins (1975), and Holt (1964, 1967), provide background about school programs that evolved during the 1960s. In addition, Bruner (1986), Cazden (1988), Glaser (1984), and Resnick (1987b) have written very readable summaries of the developments in cognitive science in the 1970s and 1980s. Outstanding books of essays by distinguished educators whose work has spanned the three decades of this period are Biber (1984), Duckworth (1987), and Perrone (1989). These latter sources offer an especially practical integration of the diverse theoretical frameworks. Finally, Delpit (1986, 1988) and Hale (1982) challenge simplistic applications of progressive philosophies in schools that serve minority children, posing hard questions for well-intended mainstream educators who plan educational change without sufficient regard for their minority clients' preferences and needs.

[6] The reference list for this paper includes articles about several of the most prominent examples of these programs. The Key and Spectrum schools explore H. Gardner's (in press) model of multiple intelligences; a broad range of high schools across the country are trying Sizer's high school model (Coalition for Essential Schools, 1985; Houston, 1988); and Perkins (1986) is working with colleagues at Harvard and with Gardner to adapt aspects of his knowledge by design. Two elementary school models, one led by Stanford educator and economist, Levin (1988), and the other by Slavin (1989) at Johns Hopkins, are receiving particular attention for their focus on implementing more content substance as intensive alternatives to remedial instruction. This list is by no means exhaustive, but these examples are of special interest because they are rooted in theories that affirm the potential of poor, minority, and immigrant students who have been least successful in mainstream schools.

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APPENDIX A

Characteristics of Biological, Cognitive, and Social Shifts Occurring During Childhood

Early Childhood 4 - 7 Years	Middle Childhood 8 - 10 Years	Early Adolescence 11 - 15 Years
Biological Domain	Biological Domain	Biological Domain
Increases brain size; changes length of awake and sleep periods; begins to coordinate large and small muscles; has greater physical control over body; becomes able to take on more responsibility and physically complex tasks.	Gains permanent teeth; significantly increases size and physical shape; develops greater agility and fine muscle coordination; increases brain maturation to support subtle and complex thought and problem solving.	Develops primary and secondary sexual characteristics; experiences changing of voice; changes in physical size, strength, and shape; reaches 98 percent of adult height by end of adolescent growth spurt.
Cognitive Domain	Cognitive Domain	Cognitive Domain
Establishes knowledge of symbols systems in language and logic; manipulates concrete objects to explore; uses real events to stabilize the still uneven operational thought; begins to categorize and organize for improved use of memory strategies; uses spontaneous rules to guide logic and actions.	Continues to rely on learning through concrete experiences; increases memory capacity and use of strategic remembering; improves use of organized thinking; achieves new learning by relying on concrete operations and experimentation; develops logical precision with quantitative problems.	Developes mature thinking processes and ability to conceptualize; can abstract beyond the present; thinks about self in social world; begins to assess own ability against others; develops greater awareness of moral issues and politics; begins to take moral and political stands; increases interaction of gender and culture affecting moral and social values.

Early Childhood 4 - 7 Years	Middle Childhood 8 - 10 Years	Early Adolescence 11 - 15 Years
Social Domain	Social Domain	Social Domain
Begins to understand the point of view of others; starts to think about how his or her ideas and actions are seen by others; plays with words and ideas; shares and dramatizes stories and lore of the community; indicates that fantasy, dramatic play, and egocentrism are still very important in all aspects of development.	Participates actively with peer group; plays games with defined rules and rituals; is increasingly responsive to deliberate instruction; adheres to rules as absolute; allows parents and teachers to structure and guide actions; compares self to peers and begins to expand and emphasize importance of peer group.	Shows increased desire for autonomy; displays salience of identity and competence issues; increases peer orientation; manifests heightened awareness of sex and its effect on individual and peer group relationships; places self in peer group; continues strong identity with and need for family.

APPENDIX B

Children's Psychoeducational Needs, By Age Group

The Primary Years Four to Seven (Bredekamp, 1987; Katz, 1977)	Middle Childhood Eight to Ten (Cohen, 1972); Elkind, 1974)	Early Adolescence Eleven to Fifteen (Eccles & Midgley, 1988; Lipsitz, 1984)
Psychological Safety		
Deep sense of personal and emotional safety, psychological connectedness, and trust.	Positive feelings toward self and a sense of personal mastery.	Safe environment to explore autonomy and identity issues and to develop understanding of multiple changes that are occuring.
Esteem and Self-Worth		
Adequate self-esteem, measured against the criteria established by home, family, community, and ethnic group.	Realistic perception of self and others in terms of life's circumstances; flexible group alignments and strong friendships.	Meaningful opportunities to develop competence and achievement through participation in the community.
Connectedness to Adults & Peers		
Child and adult models who exemplify and help children develop qualities the community values and wants them to acquire	Relatedness and ability to develop deep and warm connections.	Opportunities to explore and define identity and to discover talents in collaboration with same and opposite gender adults and peers.

The Primary Years Four to Seven	Middle Childhood Eight to Ten	Early Adolescence Eleven to Fifteen
	Caring Guidance	
Authoritative and clear direction from caring and responsive adults.	Relatedness and connectedness to the community; experiences developing capacities and responsibilities in new contexts.	Structure and well-defined limits developed and enforced jointly by adults and peers.
	Intellectual Competence and Achievement	
Adults and peers to help deepen, construct, and make sense of the child's many worlds against real life contexts.	Independent and open thinking, combined with encouragement to seek and accept assistance in new content domains.	Opportunities to extend and test cognitive capacity for abstract thinking through a multiplicity of activities, experiences, relationships.
	Applied and Varied Learning Experiences	
Experiences that are inherently satisfying, interesting, and authentic, constructed by children on the basis of their own conception of the world.	Curiosity and creativity developed by expanding and reorganizing especially in science and the arts.	Physical and social activity through which to explore and define experiences associated with physical, social, emotional, and intellectual changes.
	Role Models and Values	
Relationships with adults who are clear and confident about thier values and who work towards those values with conviction.	Recovery and needs coping strength; opportunities to regain equilibrium in the face of challenges and obstacles.	Affirming interactions with both adult and peer role models who represent the community's moral standards and values; experiences with others exploring ways to achieve agreed upon ethical standards.

APPENDIX C

Background References for Inquiry-Centered School

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TEACHER DEVELOPMENT IN PROFESSIONAL PRACTICE SCHOOLS

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TEACHER DEVELOPMENT IN PROFESSIONAL PRACTICE SCHOOLS

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We approach the topic of teacher development in professional practice schools with both optimism and caution. We are optimistic because we think the time is ripe for the creation of professional practice schools and because we know from our own and other's experience that teacher development can improve teaching and schools. We are cautious because we also know that, in the name of professional development, educators have made mistakes. Too often, structured activities and programs have upheld the status-quo rather than change it, perpetuating the "paternalistic system that reinforces 'schooling as usual'" (Lambert, 1988, p. 666). We define, therefore, our use of the phrase *teacher development* and distinguish it from competing notions of inservice education and staff development.

To our way of thinking, the term *inservice education* has become synonymous with training and implies a deficit model of education. In the *National Society of Student Education Yearbook on Inservice* (Henry, 1957), contributors such as M. Miles and A. H. Passow focused on the technical aspects of teaching. After the launching of Sputnik, coincidentally the same year that the Yearbook was published, the idea of teacher inservice as remedial training took hold. Subject matter specialists from the arts and science faculties in universities were enlisted to write "teacher-proof" curricula. Teacher institutes, funded under the National Defense and Educational Act (NDEA), proliferated. These institutes were designed either to train teachers to use new, externally developed instructional materials or to update teachers' academic thinking in the content areas. The many failures of this approach to professional development have been carefully documented (Sarason, 1982). One might suppose that the notion of inservice education as training died a quiet death some time ago. Sadly, this is not the case. In many districts and schools, professional development still implies a deficit training model. Assemblies filled with an entire school staff still dot the landscape of allocated "staff development days." Outside experts still transmit "the word" to the unanointed, be it assertive discipline, mastery teaching, or the elements of effective schools. Teachers are viewed as "the passive recipients of someone else's knowledge" (Miller, in press), rather than as sources of knowledge themselves or as active participants in their own growth and development.

The term staff development, on the other hand, implies a broader notion of professional growth--one with which we are more, but not totally, comfortable. In the midseventies, a major shift in the research on and writing about staff development is exemplified by the findings of the Rand Change Agent Study (McLaughlin & Marsh, 1978), Goodlad's analysis of the League of Cooperating Schools (1979), and Hall and Louck's work on teacher concerns (1979). This shift is most notable for its emphasis on the school as an organization and the connection that it makes between the development of teachers as individuals and the development of the school as a whole. Over a decade ago, we defined staff development as "working with at least a portion of a staff over a period of time with the necessary supportive conditions" (1979). While this approach to teacher development was more broadly construed than inservice training, it often, though not always, assumed that the role of development was to assist teachers in either adopting an externally designed program, making adaptations to some technological innovations, or implementing a federal or state program.

We will therefore use the words teacher development when we write and talk about professional growth activities in a professional practice school. By teacher development, we mean continuous inquiry into practice. In terms of professional development, we see the teacher as a "reflective practitioner" (Schon, 1983, 1987), someone who has a "tacit knowledge base" and who then builds on that knowledge base through on-going inquiry and analysis, continually rethinking and reevaluating values and practices. Teacher development is not only the renewal of teaching, but it is also the renewal of schools. Teacher development is, in effect, culture building. In the following pages, we first provide a framework for developing a culture of inquiry in a school; then, we consider professional growth activities appropriate to that culture; and, finally, we discuss some of the problems and dilemmas that must be recognized and worked through to maintain and support teacher development in professional practice schools.

Building a Culture of Support for Teacher Inquiry

Having made the case for teacher development as continuous inquiry into practice, we are well aware of the complexity of this notion, the difficulty of transforming it into reality, and the necessity of having, or creating, a culture in the school that supports teachers as they become active inquirers into the process of teaching and learning. Fortunately, in the last few years, research and practice have provided some important insights about how to constitute such a culture. Five elements have emerged as essential:

- norms of colleagueship, openness, and trust;
- opportunities and time for disciplined inquiry;
- teacher's learning content-in-context;
- reconstruction of leadership roles; and
- networks, collaborations, and coalitions.

They combine to create a culture of support for teachers engaged in continuous inquiry.

Colleagueship, Openness, and Trust

Little (1981, 1986) in what has become a benchmark study on staff development, followed six urban schools as they became involved in district-sponsored staff development. Her findings indicate that norms of colleagueship and experimentation are most responsible for the successful implementation of new programs. In schools where the principal actively engaged with teachers and announced expectations for and modeled behaviors of colleagueship, there was increased support for self examination, risk-taking, and collective reflection on practice. When teachers and principals observed each other in classrooms, had time to talk about what they were doing, and worked to find solutions for commonly defined problems, the life of the teachers in the school improved. Traditions of privacy, practicality, and isolation (Lieberman & Miller, 1984) were replaced by shared ownership of issues, a willingness to consider alternative explanations for practices and behaviors, and a desire to work together as colleagues. In effect, creating an innovative staff development organization to support a new program, the staff was building a new culture for the school and defining new ways of being for themselves as teachers.

As Little (1986) writes,

> The successful program rested on long-term habits of shared work and shared problem solving among teachers. Such patterns of mutual assistance, together with mechanisms by which teachers can emerge as leaders on matters of curriculum and instruction are also typical. (p. 42).

These notions of shared work, shared problem solving, mutual assistance, and teacher leadership in curriculum and instruction are--to our mind--the cornerstones of a school culture that supports continuous inquiry into practice.

Rosenholtz (1989), in her study of the school as a workplace, adds to our understanding of the effects of the norms Little describes. Rosenholtz categorizes schools as being either "learning-enriched" or "learning-impoverished." Learning-enriched schools had collaborative goals at the building level, minimum uncertainty, positive teacher attitudes, principal support of teachers to the point of removing barriers, and support for collaboration rather than completion. On the other hand, in learning-impoverished schools, there were no clear or shared values, teachers rarely talked to each other, work was perceived as routine, and both self-reliance and isolation flurished. In the learning-impoverished schools, teachers, with no vehicle for discussion or shared reflection, retreated to their individual classrooms, kept quiet about their successes and failures--and, afraid of being found inadequate--assumed a public stance, as experts. In the learning-enriched schools, teachers, who shared their successes and failures, were more willing to identify and explore common problems and seek common solutions. The myth of expertise was replaced by the reality of collective struggle and discovery. Like Little, Rosenholtz provides evidence that colleagueship and collaboration provide some of the necessary conditions for teachers to reconceptualize their work, to engage in active investigations about their practices, and to expect that professional learning and growth are part of their work life in schools.

Opportunities and Time for Disciplined Inquiry

In a school where teachers assume leadership in curriculum and instruction and where reflective action replaces routinized practice, providing opportunities and time for disciplined inquiry into teaching and learning becomes crucial. Unlike traditional school settings, professional practice schools are places where teachers, sometimes working with university scholars and sometimes working alone, do research on, by, and for themselves. Professional practice schools must provide the conditions that allow teachers to develop the skills, perspective, and confidence to do their own systematic investigation.

The notion of teacher-as-researcher is not new. Writing over 20 years ago, Schaefer (1967), then dean at Teachers College, Columbia University, urged that schools should organize as "centers of inquiry." More recently, Myers (1989), then president of the California Federation of Teachers, and now executive director of the National Council of Teachers of English, argued that "school site teacher-research projects are a basic requirement of the current second wave of school reform" (p. 1). The case, then, has been made for teacher research, but the question remains: How do schools organize themselves and create the necessary conditions so that teacher research is encouraged, supported, and used?

The answer, we suspect, is not to hold externally-driven workshops on research methods and then ask school staffs to apply the findings to classroom practice. Rather, the research sensibility must be infused into the daily life and work of the school. Such an infusion takes time and commitment. It begins with an acknowledgment of the importance of norms of colleagueship and experimentation; it builds on shared problem identification and a mutual search for solutions; it depends on taking a risk in the classroom; it requires the support of colleagues. Let us present a case in point.

Mary George is a first grade teacher in a school trying to organize itself around Schaefer's notion of the schools as centers of inquiry (1987). For over a year, she and her colleagues have been meeting in grade-level teams and in school-wide forums. The question, with which the faculty has been grappling over the year, is "How do we understand more about how children learn?" Mary has had no formal training in research. What she does have is a very specific problem that has been troubling her and other teachers for some time. Namely, how do children approach the new words they encounter in their reading? Like her colleagues, Mary has been torn between phonics and whole language approaches but has been wary about accepting one to the exclusion of the other. She and her problem go into class one day, and when she generates a list of words that students miss in an initial reading of a "big book," she begins a spontaneous inquiry into how children learn new words. She asks the children, "How many of you could figure out the word left?" One boy raises his hand and explains how he sounded out the word, beginning with the initial consonant and moving on to the vowel and the final consonant sounds. Raising hers, a girl begins to explain that she knew the story was about hands, and she knows that people have left and right hands, and she knew that the word in question began with l, so she figured out that the word must be left. A third child, another girl, her hand also raised, tells the class that she knew the word because she saw it in another book. She proudly finds the other book in the classroom library and shows it to the class.

This simple experiment that Mary George conducted in her classroom was, actually, the beginning of research. George acknowledged later, in discussing with her colleagues what she did in class, that she considered her initial question an enormous risk. Though she had never approached her teaching as research before, she acknowledged that the ethos of inquiry that dominated the school and the support she knew she would get from her colleagues gave her the courage to risk her experiment. She was delighted with the results, as were the rest of the first grade teachers who each took George's question to her next class. Together, the first grade teachers began putting together the pieces of the puzzle of word recognition in a way that made sense to them and had value for their classroom practices. Eventually, perhaps it can be shared with other teachers through presentations at conferences, in published papers or electronic networks, and thus help teachers outside George's school.

Teacher research can be more complex and more sophisticated than Mary George's spontaneous inquiry. But we should not let sophistication and complexity become the criteria by which we judge disciplined inquiry into practice. Rather, the importance of the question, the legitimacy of the sources of data, and the usefulness of the results should guide our practice. What is important is that authentic teacher research develops in an environment where culture building and professional colleagueship are also being nurtured and sustained.

Teacher Learning of Content in Context

One may argue that all of this talk about teacher development as continuous inquiry into practice is long on process and short on content, that it places too much value on reflection and sharing and not enough value on what is being reflected upon and what is being shared. As Cooper (1988) reminds us, "In professional settings, when teachers are moved to share, it is usually because they are proud of something they have done with children." At the present moment, we think there is reason to be proud of what we call content-in-context learning, reason to share these approaches, and reason to make them the centerpiece of curriculum and instruction in professional practice schools.

Unlike the call for "cultural literacy" and "core learnings" the movement for content-in-context learning acknowledges the complexity of the educational enterprise without relinquishing the mission that educators have to teach children something of enduring value. Central to this school of thought is the notion that students come to school with a wealth of prior knowledge and ongoing access to experience that can be tapped to motivate and ground school learning. As our discussion unfolds, it should become obvious why this approach to instruction is so compatible with teacher development as we've defined it. There are many examples of content-in-context learning, including the writing process approach, whole language learning, math through manipulation, hands-on science, and "the Foxfire approach" (Wigginton, 1988).

These approaches to instruction both engage teachers in focusing on student-oriented learning and change the ground rules for teacher learning and development. What distinguishes these approaches to curriculum and instruction from the curricular reforms of past movements is their focus not only on student motivation and student-centered curricula but also increasingly on the facilitative role of the teacher. These approaches offer practical examples of how to act upon the new understandings emerging from recent research on cognition. Insights such as those recognizing the need to provide problem-solving activities and the fact that solving problems requires a mix of social and cognitive skills go along with research that indicates that students need different modes of instruction (some need loose structures to invent; others need direct instruction before they can learn under conditions of structural looseness), are helping to inform new curricular and instructional demands on teachers (Devaney & Sykes, 1988).

One example of the change in ways teachers learn in practice is being carried out by Wiggingon through Foxfire. Foxfire, much more than a publication, is a style of education best characterized as having the following ingredients:

- All work teachers and students do together must flow from student desire.
- Connections of the work to the surrounding community and the real world outside the classroom are clear.
- The work is characterized by student action rather than passive reception of processed information.
- A constant feature of the process is its emphasis on peer teaching, small group work, and teamwork.
- The role of the teacher is that of collaborator and team leader and guide, rather than boss or the repository of all knowledge.
- There must be an audience beyond the teacher for student work.

- The academic integrity of the work must be absolutely clear.

- As the year progresses, new activities should grow out of the old. As the students become more thoughtful participants in their own education, the goal must be to help them become increasingly able and willing to guide their own learning, fearlessly, for the rest of their lives. (Wigginton, 1988, p. 26)

We think these nine "ingredients" incorporate many of the principles of curriculum and instruction implied in contemporary research on cognition. We also believe that this style of education happens best in an environment that values openness and collaboration and encourages disciplined inquiry. If professional practice schools are, in fact, centers of inquiry, where continuous teacher development is the norm, then the content-in-context style of education provides much of the substance around which inquiry may be focused. But, as we cautioned earlier, experimenters must continuously examine these process approaches to student learning and teacher facilitation. If the approach is working, students' products must grow in complexity and thought. For example, student writing should include lots of revision, during which process clarity should improve and better images should deepen. A process approach should, eventually, engage students in thinking critically, writing better, and moving beyond subjects like "What I did on my summer vacation." Better process does not automatically mean better products. Both process and products must be scrutinized by teachers and students for their significance, depth, and enhanced understanding. We are talking not about panaceas but about development of "habits of mind" that make it legitimate to continually ask questions of practice.

Reconstruction of Leadership Roles

In traditional school settings, leadership is defined by one's position in the organization. Principals lead; teachers do not. In professional practice schools, the whole concept of leadership is being reconstructed. Sergiovanni (1987) makes what we think is a useful distinction between technical and managerial conceptions of leadership and cultural leaderships. He writes:

> In human enterprises such as the profession of teaching and schooling, technical and managerial conceptions should always be subordinate to human needs and actions and should always be practiced in service of human ends. Cultural leadership--by accepting the realities of the human spirit, by emphasizing the importance of meaning and significance, and by acknowledging the concept of professional freedom linked to values and norms that make up a moral order--comes closer to the point of leadership. (p. 127)

Sergiovanni is proposing that principals learn to think and act as leaders in ways different from those of custom and tradition. According to Sergiovanni, leaders lead by purpose and empowerment, exercising power but of a different sort than usually practiced. Theirs is "power to accomplish" rather than "power over people and events." They practice the concept of "leadership density... the extent to which leadership roles are shared and the extent to which leadership is broadly exercised ..." (p. 122). When so construed, leadership, something that both administrators and teachers have and use, becomes an essential ingredient in transforming schools into centers of inquiry.

For principals, life in such a setting requires a radical shift in attitudes and behaviors. In a compelling study of two high school principals, Derrington (1989) brings home the difficulty building administrators have in making the transition from technical and managerial leadership to cultural leadership. In the transition, he identifies three major steps with subsets:

Tradition	Transition	Transformation
The boss	The lone ranger	Parallel leadership
Branch manager	Hero	Hero maker
Adversarial	Competitive	Collegial [sic]
Views teachers as Objective for Improvement	Views teachers as Vehicle for Improvement	Views teachers as Partner for Improvement
Works through Directive	Works through Small groups	Works through Collaboration and power equalization
Rewards and punishes	Builds coalitions	Solves problems

(p. 180).

For teachers, it is equally difficult to assume new roles. Wasley (1989) uncovers many of the tensions and dilemmas that teacher leaders face as they assume new roles in schools. She notes that all the teacher leaders she studied felt constrained by time--time to both teach and lead effectively and time to work collaboratively with their colleagues. Teacher leaders were often confused about the primary purpose of their positions; were they to support teachers or were they to support administrators? In addition, they had a tough time dealing with their colleagues in their new leadership roles. The egalitarian ethic dominates teaching, and many teachers have difficulty in recognizing one of their own as a leader. To paraphrase George Orwell's epigram, the notion that all teachers are equal but some teachers are more equal than others goes against the grain. Most importantly, the success of teacher leadership depended on the principal's ability to make the transition from traditional to transformative or cultural leadership.

It is clear, then, that one of the tasks a professional practice school faces is to make the transition from bureaucratic and hierarchical modes of leadership to alternative forms. That this process is difficult and fraught with tension must be acknowledged. What also must be acknowledged is that in schools where principals and teachers together make the transition, there exists the real possibility for colleagueship, collaboration, and the development of a new and fruitful professional culture. In schools where teachers are making responsible, well-grounded decisions about instruction in their classrooms and where principals are supportive of those decisions, the possibility for continuous learning takes root. One such example shows what this could look like. Soo Hoo (1989) describes a collaborative project in which she, in collaboration with another principal and a university faculty member, engaged teachers in a discussion of the misuses of standardized tests. Teachers generated such questions expressing their concern as:

- How do we know students are learning?
- How do we capture the data available in our classrooms?
- What are some new ways of displaying student achievement?

Teachers kept journals, while the university researcher made observations and helped with additional data collection techniques (Kerchner, 1989). Through monthly meetings and discussion about the information teachers collect and use, as well as about alternative sources of data, the principal helped a culture of inquiry develop. In this case the principal, teachers, and university researchers provided the group with the impetus to examine the frustrations of testing and free a variety of understandings about assessment, which in turn led to other subjects for inquiry. Again, the description and practice begin to show us how to think about and engage teachers.

Networks, Collaborations, and Coalitions

While it is important to concentrate energies on the specific school site, it is also important to develop support systems outside of the school. Too often schools in the process of radical transformation suffer from the "funny farm syndrome" (Goodlad, 1988). They stand out in their district as different and, therefore, often threatening. Teachers involved in professional practice schools may find they have a difficult time explaining just what they're about to colleagues within their own district and that the support they need from the immediate environment is missing. Forming networks, collaborating, and creating or joining coalitions can combat the "funny farm syndrome" in providing support and encouragement for teachers who continue to experiment, to question, and to work to change common practices in an effort to improve education for children.

Networks, collaborations, and coalitions take many forms. They may be informal collections of people or they may be more formalized partnerships among institutions. In any case, such groupings share some common characteristics. They are alternative in nature, share a common purpose, exchange information and psychological support, are voluntary, and are based on equal participation of all members (Parker, 1979).

The Puget Sound Educational Consortium and the Southern Maine Partnership are both members of the National Network for Educational Renewal, a national coalition of school/university partnerships. In both Washington and Maine, the partnerships serve more to connect people across schools and districts than to connect schools to the university. In both settings, groups of teachers come together regularly to discuss and act on matters of common concern. In the past two years, groups of teachers have dealt with issues of equity, teachers' leadership, restructuring schools, grouping practices, early childhood education, and students at-risk. The groups' power stems from the fact that they are self directed, define their own agendas, and provide the opportunity for teachers of like mind and like disposition to exchange experiences and ideas in an atmosphere of support and common understanding. People involved claim that group participation provides the support they need to return to their schools with renewed energy and commitment.

The Coalition of Essential Schools is an example of collaboration at the national level, where schools are drawn together by a common purpose and a clearly defined mission. The Coalition grew out of the work of Ted Sizer (1984) and comprises over 40 high schools who ascribe to a set of principles that involve different roles for teachers as generalists and students as workers and a different conception of the school curriculum; "less is more" has become the credo of the group. Though the Coalition does not provide much opportunity for face-to-face interaction among teachers at member schools, it does serve as a source of support for schools, many of whom are isolated in their districts and who look to a national movement to help legitimate their local efforts.

The American Federation of Teachers Center for Restructuring also helps teachers, schools, and school districts involved in restructuring through networks of common interest, publication of a bimonthly newsletter, Radius, and conferences and meetings on subjects of common concern. A leadership network, the Urban District Leadership Consortium, brings together superintendents, school board members, and union presidents of districts involved in education reform.

Networks, collaborations, and coalitions need not be as formal as those we've discussed here. Through the Philadelphia Teachers Learning Cooperative (Buchanan et al., 1984), teachers come together on an informal basis once a month to discuss preassigned reading. In other cities and towns, teachers have joined to form small resource centers where they can meet to discuss issues, exchange ideas, learn about effective practices, and develop learning materials.

Whole schools, like individual teachers, can become isolated and estranged from the mainstream. Both must reach out beyond traditional borders and create sources of support, challenge, and legitimacy. Teachers who see themselves as part of a school in the process of change must also see themselves as part of a profession in the process of change. In that way, the norms and values of the school become part of a larger social system, one that sustains improvement and encourages it.

Teacher Development in Professional Practice Schools

The five elements that combine to create a culture of support for teacher inquiry do not take root quickly. It takes time for change to happen, even in a school that defines itself as different. Teacher development activities must occur alongside the development of the new school culture. In fact, teacher culture and development are part of the same process in a professional practice school. This means that activities for teacher development are

- designed around notions of colleagueship, openness, and trust;
- provide time and space for disciplined inquiry;
- focus on teacher learning of content in context;
- provide opportunities that lead to new leadership roles; and
- lead to networking activities and coalition building beyond the boundaries of the school.

Several examples of activities for teacher development that seem to combine these elements and hold particular promise for professional practice schools follow.

Teacher study groups. Such groups meet regularly to discuss an agreed upon topic or theme. Teachers rotate leadership of the group. The role of the designated teacher-leader is to select a common reading and to make it available to all group members before the meeting, to structure discussion by preparing a question or problem to answer, to facilitate discussion, to ensure that minutes of the meeting are taken and distributed, and finally to guide the group in making a decision about the direction the next meeting should take. In general, teacher study groups take place outside of the school in an informal setting around a pot-luck meal or similar occasion to eat together.

Curriculum writing. Groups of teachers work together over time with the intention of developing an instructional program for use in the classroom. The product varies as the task varies and may take the form of a guide for teaching, an inventory of classroom practices, a statement of expectations of learners and teachers, a program evaluation, a set of recommendations for program design--anything that meets the needs, interests, and inventiveness of the teachers involved (Miller, 1989). Teachers initiate and lead curriculum writing groups, which function as long as it takes to complete a task, allowing teachers the opportunity to move in and out of groups as time and interest permits.

Teacher research projects. Such projects may be individually or group initiated. The project begins with the identification of a problem that matters to someone. Even though one person's problem may seem trivial to someone else, it is important to assume that each individual or group engaged in research has a legitimate concern that needs to be addressed. The goal of the research is both to understand practice and to improve it. The majority activity of teacher research is the collection and analysis of data. Data collection need not be cumbersome or overly technical. Data can be collected through observation, informal interviewing, journal entries, and brief surveys. Researchers do not have to worry about doing complex statistical analyses or proving the generalizability of findings, since the problem under consideration is usually idiosyncratic to the people involved or to the specific school. Often times, teacher research is published informally for the information and use of other faculty.

Peer observation. Teachers, usually in pairs, make informal contracts to visit each other's classroom and to observe each other's teaching. Sometimes, the visitor concentrates on the behaviors and practices of the teacher being observed. At other times, the visiting teacher focuses on the actions of the students or of one or two students in particular. In any event, the purpose of the observation is mutually determined before the visit takes place. Afterwards, the visitor and the observed take time to discuss what happened. It is the role of the visiting teacher to provide descriptive feedback to the practicing teacher, and it is the role of the teacher observed to make sense of the feedback, either alone, or in consultation with the visiting teacher. The contract, renegotiated after each visit, may be altered or terminated at any mutually agreed upon point.

Case conferences. These meetings engage teachers in a method of problem solving usually reserved for medical personnel and social workers. In the case conference, a group of teachers agree to meet to discuss cases of individual students. The person presenting the case is responsible for developing a history of the child in school, a description of behaviors, attitudes, or academic concerns. The task of the other group members is to pose questions that help clarify the issues at hand and to offer suggestions for solving any problem. Each meeting focuses exclusively on one case. Participants rotate in presenting cases to the group.

Program evaluation and documentation. Teachers want to evaluate current practices as part of an ongoing investigation of what works and what doesn't work for children. As new programs are put in place, new textbooks adopted, new practices of grouping students initiated, new approaches to instruction implemented, and alternative modes of assessment designed, teachers can collect information useful for future decision making. Using the techniques of teachers' research, an evaluation team collects data on a program or approach that the faculty as a whole has decided is worth investigating. The evaluation team analyzes the data and presents its findings to the faculty for consideration and action. The role of the evaluation team is not to judge effectiveness, but rather to collect data for decision making by the larger faculty.

Trying out new practices. Experimenting with innovative techniques with systematic support from colleagues is one way to make it easier for teachers to try and fail and try again, without quick retreats to routine, safe ways of doing things. As teachers become interested in content-in-context learning approaches, they may want to experiment with process-writing, begin a Foxfire project, or incorporate experiential learning activities into their teaching. We have found that the closer change gets to the individual classroom, the riskier it gets. When a cadre of teachers decides to try out something together, it is easier to experiment and take risks (Little, 1986). Such a group follows this pattern. Teachers

- commit to implement a new approach;
- agree to meet regularly to discuss what is happening to them personally in their classrooms;
- contract to observe each other and to provide feedback on the new practice;

- agree to suspend all judgment and evaluation of themselves and others;
- work together to become comfortable with what they are doing and to support each other in doing it better; and
- give themselves ample time to try and fail and try and succeed.

In the end, teachers become confident about new practices and make decisions about whether to incorporate them into their existing repertoire, to modify them to suit individual needs, or to reject them as not helpful in improving their teaching.

Teacher resource centers. Such centers can be easily structured within a school. A small room off the library or media center, a converted stockroom, a renovated space hidden somewhere in the building--all suffice. We have seen teachers' resource rooms in the basements of buildings, even in old rest rooms. The place doesn't matter; what matters is that a place exists where teachers come together in the school to read journals, view educational videos, peruse books and catalogs, or simply engage in informal, professional conversation. We suspect, however, even in a professional practice school, there will still be a need for a traditional teachers' lounge, where staff can banter and gripe as an antidote to the tensions that come with teaching. The teacher resource room, then, serves as an alternative to the lounge, with alternative norms, expectations, and interaction among colleagues during the school day.

Participation in outside events and organizations. Teachers can make connections outside of the boundaries of the school where they work every day through joining out-of-school groups and activities. Provision for teachers to visit other schools, which are engaged in reform and restructuring efforts, are a valuable way for broadening perspectives, becoming energetic, and considering new ideas. When teachers are actually practicing new approaches or subjects and have already had some success, opportunities to teach others about how they have learned become another powerful means of professional development. Attendance at regional conferences is another way that teachers can reach out and connect with kindred spirits in schools. Participation in partnerships with universities and business, involvement in coalitions with other agencies, membership in a formal network of teachers or schools is yet another avenue for growth and development.

In this partial listing of the kinds of teachers' development activities possible as part of the general organization of a professional practice school, we emphasize that none of the approaches we suggest is an "add on"; none is initiated outside of the worklife concerns of teachers; none is designed for teachers by others. Each teacher contributes to the development of a new school culture; each acknowledges that the major goal of teacher development is continuous inquiry into practice.

Teacher Development - Changing Student and Adult Working Conditions

Our view of teacher development ends where it began, recognizing that engaging teachers in creating professional practice schools cannot be isolated from the larger vision of designing schools that work for all students. This means that the entire school becomes involved in discussion and action around the issues of teaching and learning, such as uncovering new knowledge about how students learn, understanding diverse multicultural populations of students, as well as developing sensitivities to changing cultural contexts--all concerns that call for new ways of thinking about and organizing teaching to enable students to participate in their own learning.

Teachers, long engaged in successful and unsuccessful private struggles with their students, need to create and work in structures that are both collective and collaborative. The isolated classroom must give way to genuine colleagueship just as the insulated school must expand to include the whole community. This means that the workplace for both students and adults must change, for they are intimately connected with each other. We know that teacher development involves teachers in learning about how to work together, how to make collective decisions, and how to structure continuous opportunities for their own growth. But, at the same time, teachers must be constantly involved in new learning about students--their motivation, engagement, connection and experience--through practicing new ways of teaching and providing for new ways of student learning. These two strands represent two distinct parts of teacher development, each part taking time, energy, and new knowledge.

We are cautious about predicting that positive changes in the adult workplace will lead to positive changes in the students' learning environment, or the other way around. The two environments connect only if connections are made explicitly. It is possible for teachers to participate on school site committees, to be involved in greater decision-making, and to deal with conflict and negotiate contracts for greater teacher participation in the running of a school without changing what goes on in classrooms. And conversely, it is possible for several teachers to run classrooms characterized by cooperative-learning teams, student-centered learning, and a focus on problem-solving activities without addressing the need for school-wide structures that promote collegiality and continuous inquiry, which in turn support efforts to improve learning for students.

We are optimistic, however, that what happens to students, teachers, and schools will not happen in isolation, because professional practice schools can indeed value, promote, organize, and practice teacher development by explicitly connecting it to student development. Professional practice schools can provide a variety of learning environments where students can be active learners and a work place for the teachers and other staff, rich in continuous inquiry, peer discussion, and increased opportunities for adult learning.

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PROFESSIONAL PRACTICE SCHOOLS IN CONTEXT:

NEW MIXTURES OF INSTITUTIONAL AUTHORITY

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PROFESSIONAL PRACTICE SCHOOLS IN CONTEXT: NEW MIXTURES OF INSTITUTIONAL AUTHORITY

Barbara Neufeld

In a series of recent papers, the AFT Task Force on Professional Practice Schools proposed the creation of schools "designed to be the institutional base for teaching as a profession." Known as professional practice schools, Levine and Gendler (1988) explain that such organizations would be:

> local public elementary or secondary schools specially designed by a collaborative of university, school district, and teachers' unions. Their purpose [would be] threefold: to support student success; to provide a professional induction program for new teachers; and to support systematic inquiry directed toward the improvement of practice. (p. 27)

Those who worked in them would construe teaching as neither standardized nor prescriptive, stressing instead the reflective, inquiring, situational and analytic aspects of professional practice. This orientation, inventors of the professional practice school concept argue, would lead to teaching that is more tailored to students' needs and, so, more likely to lead to student success.

Professional practice schools would be organizations attentive to teacher as well as student learning because the two are integrally related. They would include well-designed, teacher influenced clinical education programs for preservice and induction-year teachers as well as opportunities for on-going professional development. In this regard, professional practice schools imply an equal partnership of elementary and secondary school teachers with college faculty in the preparation of new teachers.

By proposing that schools be centers of inquiry, the professional practice school concept places considerable emphasis on the importance of developing usable knowledge about teaching at the school and classroom level. It envisions an institution in which school and campus-based educators will work toward articulating and utilizing knowledge about teaching and learning generated by teachers as well as by campus-based researchers in the preparation of new teachers, and in the on-going work of experienced teachers (Levine & Gendler, 1988). Professionalization of teaching would evolve as a result of teachers' greater responsibility for (1) the preparation of others who enter the profession; (2) the production of knowledge about teaching and learning; and (3) the development of standards of adequate teaching performance. Professional practice schools imply a teaching profession with greater responsibility for preparing and monitoring the performance of its members. According to Levine & Gendler, professional practice schools will "address the two issues at the top of the public education agenda today—the problem of how to restructure schools to support student learning and the problems of professionalizing teaching" (p. 27).

There are other proposals for restructuring schools, creating new kinds of relations with teacher preparation institutions, professionalizing teaching, and, of course, improving student learning.[1] The concept of professional practice schools, however, represents the emergence of teachers' voices in the conversation about school reform.

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[1] See, for example, Tomorrow's teachers: A report of the Holmes Group (1986), and the Carnegie Task Force report on A nation prepared: Teachers for the 21st century (1986).

They join schools of education, state departments of education, and local districts, all of which have been wrestling with what to do to improve teaching and learning and all of which have a great stake in the future of schools and of teaching. And, they join the conversation in an environment already rich with programs and proposals striving to alter traditional ways of teaching children and preparing teachers.

Professional practice schools have been proposed in a context that has only recently become attentive, however, to the role of the school as the locus for improving teaching and learning, and teachers as a prime source of professional knowledge. That new attention is growing in the midst of deeply rooted teacher education traditions that construe the university as the source of knowledge about teaching. Even though teachers (and often teacher educators) acknowledge the shortcomings of traditional teacher education, as yet they have little experience with alternatives. Finally, professional practice schools have been proposed in the context of a slew of newly implemented state education policies, many of which reflect a bureaucratic, hierarchical orientation to reform that emphasizes the external, centralized prescription and monitoring of teachers' work. Such an approach is different than the emphasis on local program development and practitioner-generated knowledge intrinsic to professional practice schools.

This being the environment, what would be involved in designing and implementing the AFT's vision of professional practice schools? As teachers and teacher education programs try to create such schools, what will be likely points of conflict and compatibility between them and the contexts in which they operate? What kind of formal and informal stumbling blocks and constraints might such efforts face? What traditions and standard operating procedures would be challenged? What kinds of extant policies would militate against the creation of such institutions? What features of the policy and practice environments would support and facilitate design and implementation? For no matter how good the concept of professional practice schools may be in theory, it is doubtful that it can be nurtured, and thereby tested in practice, in every locale. Some settings, because of distant and recent approaches to school and teacher education reform, will be more hospitable. Others will be less so. If we wish to attempt professional practice schools, it makes sense to seek nourishing contexts for their inception and development. What might those contextual features be that work for and against professional practice schools?

This paper begins an exploration of these questions by playing out the idea of professional practice schools in light of some of the contexts in which they would be created. It looks specifically at what is implied for teacher education institutions and for schools, and the likely interaction of organizational and professional requirements of professional practice schools with extant and up-coming state policies designed to improve teaching and learning, as well as the status of teachers. For the discussion of school/university collaborations, I draw primarily on the combined experiences of several recent collaborations in Massachusetts (Neufeld & Haavind, 1988), New York (interviews with teacher educators, school district, and state personnel knowledgeable about the collaborative venture in Rochester, NY), and Connecticut (Neufeld, 1989). For the connections between professional practice schools and state policy I will present examples of several states' reforms and the likely impact of both the policy strategy they employ and the content of their policies on professional practice schools. Massachusetts, New York, Connecticut, and Florida present fruitful examples with which to play out the interaction of professional practice schools with a variety of approaches to policy. These states' policies vary in the extent to which they:

- employ mandates or encourage voluntary participation;

- specify the organization and content of teacher education at the pre-service and induction levels or enable teachers and college faculty to design programs at the local level; and,

- emphasize teachers as individuals or schools as work organizations in their reform strategies.

As such, these approaches to policy structure and content provide contrasting examples with which to play out the implications of developing professional practice schools. Exploring the implications will enable those interested in pursuing the possibilities of creating professional practice schools to extrapolate to a variety of state policies and contexts.

School/University Collaborations

Traditionally, school/college collaborations form with the goal of improving the field-based component of pre-service teacher education by involving classroom teachers more closely with the program offered on campus. Collaborations provide stability in locating and refining field placements. Teacher educators aim to increase the skill and frequency with which classroom teachers provide learning opportunities to student teachers that are congruent with the programs' goals. Often, these learning opportunities are represented by a set of activities and experiences--development of a curriculum unit, experience with whole class and group instruction, and attendance at parent conferences, for example. Colleges might prefer to work with classroom teachers who have particular teaching styles, but teaching style has been less important than the teacher's willingness to allow the student to practice teaching.

Collaborations, then, often are formally shaped by the knowledge, skill and goals defined by the college: the teacher education program helps teachers understand what it wants students to experience during student teaching and other field experiences. Only rarely do programs involve teachers as informants to the college on the shape and content of the field experience or accompanying seminars and methods courses. The college also determines the standards by which prospective teachers' teaching will be judged, and retains the authority to judge teaching quality even though the student's practice has occurred under the tutelage and eye of the cooperating teacher. Traditional collaborations require little or no reform on the part of the larger organizations in which they exist because roles and authority relations remain fundamentally unchanged. They maintain the view of teaching as a craft learned, in large part, through apprenticeship with an experienced mentor.

Professional practice schools, in contrast, would require changes in roles, role relations, ideas about teaching practice and teacher education, and the allocation of authority. As the AFT's Radius (Levine, 1988) puts it,

> Teachers as a faculty, and in collaboration with administrators and university faculty, will have to agree upon standards of practice. They will have to collaboratively evaluate and review practice in their schools; focus on the individual and collective needs of students; work together with university faculty in teaching and conducting research, and supervising interns. (p. 3)

Professional practice schools will pose new challenges because they require us to alter our image of teachers from one of lone practitioners working with groups of students to one of members of collegial teaching teams that support inquiry into practice as a professional norm.

Prospective and induction-year teachers will need field experiences that reinforce these new notions of the nature of professional practice (see Kennedy (1988) for details). In order for them to have such experiences, the culture of schools--the standard ways of doing things-- will have to undergo major changes. The professional practice school will be a new institution.

What does this new institution with new roles and responsibilities imply for school/university collaborations in teacher preparation and induction? Which issues will be similar and which different from those found in traditional arrangements? What should potential developers of such schools keep in mind as they begin the process? Because such schools do not exist, the best we can do is imagine how the set of ideas and proposed practices differs from what is traditional and play out the implications as they might develop for teacher preparation programs, classroom teachers, schools, and school districts.

Inter-Institutional Issues of Authority

Involving classroom teachers and whole schools more seriously in teacher education, implies increased authority and influence for the school site. It recognizes that classroom teachers have knowledge and skill to contribute to teacher education programs, to teacher education outside of formal programs, and that their role is not merely to better translate the university's program into school practices. This is easy to describe, but those developing professional practice schools will have to grapple with a bundle of thorny issues that logically follow. What kind of influence should teachers have and who should decide? Might they have a formal role in evaluating future teachers? In making decisions about the content of both the field experience and the on-campus components of teacher education programs? How might teachers' perspectives change what and how college faculty teach? How will disagreements be resolved? Who will decide whether classroom teachers' participation in college courses is advantageous in general? Whether a particular teacher or faculty member is sufficiently knowledgeable and skillful? Who, in the professional practice school, will be in charge of teacher education and responsible for its outcomes?

Issues of authority are certainly about control of knowledge, but they are also about fundamental resources: job descriptions and job security. New ideas about more equal collaborations may pose immediate threats to faculty in teacher education institutions because they propose increased roles for classroom teachers. Faculty may see the shift in authority suggested by professional practice schools as a zero sum game in which they lose. Activities in two recently formed collaborations provide examples related to these issues.

The first concerns a university's effort to revise its core teacher education program. The university is involved with a local school system in a collaborative enterprise that has as its goal some restructuring of schools and the creation of clinical training sites. Nonetheless, the entire revision of the teacher education program has been planned by university faculty. The program director hopes teachers in the school district will like and support the revisions. If not, the university will listen to their suggestions and make changes. This is a familiar model of program development, one that asks for teacher input after the development phase of a project. In a professional practice school collaboration, one might expect teacher involvement at the program design/development stage in which classroom teachers' experience with student teachers would be informative. Such involvement, however, requires a major shift in thinking about roles, expertise, and authority on the part of both college faculty and school teachers.

A second example of an authority issue concerns the question of who will formally evaluate student teachers when teachers have a greater role in the clinical aspects of teacher education. Traditionally, the college has been responsible for assigning the grade even though the cooperating teacher spends more time with the student teacher. In a professional practice school in which teachers have a greater role in teacher education and the development of standards of professional practice, one can imagine teachers expecting to have the authority to apply those standards to prospective teachers. Colleges may not be eager to share that authority with classroom teachers. Although they may support the notion of a professional practice school, they may feel that they are losing an important source of authority and control of teacher education.

Even when faculty are willing to share authority to assign grades to classroom teachers, university rules and regulations may require changes to make it possible. At one on-going collaboration designed to lead to a restructured school, long-standing university rules passed by the Board of Trustees require faculty to assign grades for all university work. Unless the rules are changed, cooperating teachers cannot assign "official" grades to student teachers. In this instance, even though the professor assigns the official grade, the cooperating teacher's opinion of student teachers is included via a letter of recommendation in the student's file.

Additional evaluation/authority issues will arise as the apprenticeship model of one student teacher working with one cooperating teacher is replaced by arrangements in which students work with an array of teachers. Not only will the role of the college have to be renegotiated, classroom teachers will have to work together to come to some agreements about the quality of student teachers' work. This is a desired outcome, but one that will require considerable time and thought to implement.

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School District Issues Related to Collaboration

Most often, professional practice schools will begin in school districts that operate under the traditional system of school organization and governance. As a result, in the short run at least, professional practice schools with their restructured organization and emphasis on inquiry and teacher education will be unconventional in their settings. Districts will be in the position of nurturing a new organization, whose successes might be the source of future innovation, while simultaneously sustaining the old order. In order to pursue the traditional and the new, school district administrators and school committees/boards will have made some initial decisions about (1) hopes and goals for a professional practice school, (2) design considerations, (3) implementation issues and, ultimately, (4) evaluation of the school as a whole and its various components. These decisions will be important because they will provide both a rationale and a process by which districts deal with the following kinds of potential complications.

Educational concerns. Central office personnel will be faced with explaining the connection between district goals and objectives and the educational activities going on in professional practice schools. For example, an urban district that is encouraging a professional practice school may have on the books a policy to improve student achievement by insisting on specific test scores prior to promotion. The professional practice school faculty may wish to improve student achievement not through the setting of cut-off scores but through an organization that looks at students' progress over two years instead of one, and that uses multiple measures of achievement in determining promotion. Even if the school district allows the professional practice school to pursue its different approach, one can imagine problems arising for the district and for the individual schools. Children in one school will be retained while others with similar, even identical, characteristics will not. Questions of fairness will be raised, as will questions about whether the district knows what will be effective. Some may claim that the district is "experimenting" with or "punishing" the community's children.

Or, imagine that a district adopts an inservice teaching improvement model such as the one offered by Madeline Hunter. Teachers in professional practice schools may have to obtain waivers to exempt themselves from the requirement to use the adopted instructional strategy (and from the associated evaluation schemes that often are tied to such programs). To do otherwise would contradict the definition of professional practice underlying the professional practice school. The issue highlights what is frequently a tension between the push toward standardization and control and that toward development of teachers' professional judgment in matters of teaching and learning. The district granting a waiver would find itself in the position of having to justify two competing theories of school and teaching improvement.

Ideally, in these and other situations, the professional practice school and, perhaps, the research and evaluation offices of the district will find themselves designing research/evaluation studies to determine the relative efficacy of their approaches to issues of teaching and learning. The development of such inquiry as an on-going part of school policy making is one potential benefit of the professional practice schools' presence in the district. It suggests, however, district commitment to change that extends beyond the walls of the professional practice school to the district as a whole. (For further discussion, see Levine, 1988, pp. 18-20.)

Thinking more broadly, districts will want to insure that schools set realistic goals for their teacher education and professional development work. Although a primary purpose of professional practice schools is to improve student learning, it is likely that districts will remain concerned that programs not become overly ambitious or too heavily involved in teacher education, thus drawing attention away from their central task of teaching children. Districts will have to be particularly attentive to parents' concerns. On the one hand, parents may worry about the extent to which their children will be taught by novices and/or student teachers. On the other hand, parents whose children are not in professional practice schools may feel that their children are being denied the enriched programs that result from such schools' attention to teaching, curriculum, and research. Equity and quality are likely to become concerns as these reforms move forward.

Staffing/contract considerations. Involvement in collaborative teacher education ventures and efforts to broaden teachers' roles will likely require contract negotiations that relate, for example, to teachers' job descriptions, transfer rights, release time, salary, and scheduling changes. Districts will assuredly be involved in staffing considerations. If the professional practice school is seen as something in which teachers across the district want to share, the contract may have to deal with transfers into and out of those schools. These kinds of staffing decisions may become issues for collective bargaining whether or not teachers receive additional or differential compensation for their work in professional practice schools.

There will also be job description and authority issues that directly affect principals of professional practice schools and indirectly affect those who remain in the district's traditional schools. At the simplest level, it is not clear what role principals will fulfill in a school in which teachers are responsible for decisions about teaching and learning and acceptable standards of practice. Not too long ago, principals' stars had risen; they were identified as key to school improvement efforts through their role as instructional leaders (Manasse, 1982, March). Teachers have eclipsed them in this latest reform wave, even though, formally, principals remain responsible for teaching and learning in their schools. Experiences with pilot professional development school programs in Massachusetts and an early version of the mentor program in Connecticut suggest that, in most cases, the principal's role in restructured schools or in schools that remain traditional in organization but provide new roles for teachers is not part of on-going discussions. Principals who had marginal status in several of these pilot programs noted that they would like:

- a role in deciding whether such programs come into their schools in the first place;
- a role in making staffing decisions for such programs;
- assistance or a shift in responsibility in order to oversee the implementation of school/college collaborations; and,
- district support to facilitate implementation (Neufeld & Haavind, 1988; Neufeld, 1986).

These desires are reasonable, but they understate the depth and significance of changes in school-site organization and governance that are likely to accompany the creation of professional practice schools. At the very least, (a) teachers will have a broader array of roles, (b) some budgetary discretion will be granted to the professional practice school (even if full-fledged school based management is not implemented, and (c) university/school collaborations will create inter-institution relationships that have implications for management. As professional practice schools take form, it is certain that the nature of administrative work in schools will change. As Sykes and Elmore (1989) suggest, this would be a good thing, given the impossible demands on administrators in the current organization:

> Fitting people into impossible roles and structures, relying on their coping behavior, and lionizing their successes does not constitute an effective, long-term strategy for the improvement of schooling. Instead we must create conditions for the invention of new structures that enable the emergence of leadership on a broad basis. (pp. 78-79)

Professional practice schools can "create conditions for the invention" of such structures. As with the creation of such conditions and structures for teachers, this will occur at the local level, within the context of the school and the district. Thus, the role and responsibility of principals is one with which the district as well as the professional practice school will have to wrestle.

Fiscal considerations. Fiscal issues will accompany the new, nonteaching roles for teachers, school/university staffing relationships, and (perhaps) external funding. Nonteaching (but nonadministrative) roles such as mentor, student-teaching supervisor, school-based leader of the student teaching seminar, curriculum developer, and teacher-researcher will remove teachers from classrooms, so they can engage in a broad array of professional responsibilities that are not directly instructional but are designed to serve the needs of students and intern teachers. Districts will have to replace such personnel in classrooms. Alternative funding (perhaps from the district, perhaps not) will be required to support the new positions. In their collaborative role with the campus-based teacher education program, classroom teachers may teach at the college on their own time and be paid as adjunct faculty by the college, and/or they may be released from part of their normal teaching load in order to engage in teacher education work. In the first model, an arrangement that is fairly typical without school/university collaborations, there is no financial cost to the district. In the latter model, the district may be involved with arranging the cost of covering the instructional time of the released teacher.

Whatever the situation, the district will remain responsible for financial decisions and accounting procedures. Districts will be important not only because their approval for expenditures will influence program implementation, but because they will have to manage the potentially complicated professional practice school accounts. For example, under one foundation-funded collaboration, expert practitioners from the district's secondary schools co-taught a year-long, two-semester seminar with university faculty members. The teacher and professor formed a team that worked with student teacher placements as well as with the on-going seminar. The financial arrangement involved the university's using foundation money to pay the district's portion of the teachers' salaries to make this release time from high school teaching possible. In other words, high school teachers were not paid directly by the university, although the university paid for their involvement in the collaboration. The district had additional financial management tasks associated with this arrangement.

Evaluation. School districts will no doubt want to evaluate professional practice schools in order to determine whether they are educationally advantageous and cost effective. In deciding to support the development of a professional practice school, districts will likely have articulated goals for the enterprise which, if achieved, would make it worthwhile. Administrators, teachers, and, perhaps, parents will have expressed ideas about how and why such a school would benefit the district. Locally directed inquiry might be needed to determine the extent to which the professional practice school is achieving its and the district's goals. Districts will need to take responsibility for generating this kind of information as they remain accountable to their publics. Such research-based information would also be useful in a formative sense to determine the next steps in the development of the school, and to define the insights, activities, arrangements, and strategies that might transfer to other schools in the district.

College Faculty Issues Related to Collaboration

Professional practice schools would likely lead to alterations in college faculty work. It is not clear whether faculty would be more heavily invested in the school site or whether they would turn over more of the clinical work to public school teachers, but either change has consequences from the perspective of some faculty members. Given the promotion structure of most colleges which reward faculty for research and publishing, but not for support of clinical work, if faculty spend more time in field settings, they may jeopardize promotion and tenure decisions. One faculty member noted, ironically, that it was easier to be promoted "by holing up in your office to write about teachers and collaboration than by actually getting involved in the schools." Some colleges report initiatives to reward faculty work in schools with salary increments, a step in the direction that would facilitate school/college collaborations, but promotion and tenure decisions still rest heavily on publications. If colleges encourage participation in professional practice schools, then they may need to restructure their incentive system so that participating faculty are not penalized. It is not at all clear that colleges would be interested in such a shift. If they are not, then their most likely organizational response would be to staff programs with a set of adjunct or clinical professors who hold second class status in the university.

Job security presents another, equally troublesome, issue likely to be associated with involving classroom teachers more formally in clinical work. For example, one collaborative program proposed having a high school teacher serve as the college's supervisor for a student teacher in an effort to develop a clinical appointment for the high school teacher. College faculty members objected to this transfer of authority and to what they saw as a threat to their jobs. The proposal was not implemented. Those involved with creating professional practice schools will have to devise creative staffing solutions in light of these legitimate concerns.

One additional issue for colleges concerns the involvement of liberal arts faculty in teacher education. As programs ask students to spend greater amounts of time in the liberal arts (an emphasis which seems to be growing across the country at both the elementary and secondary levels), they will spend less time with teacher education faculty. But, if programs take seriously both content and pedagogy, then liberal arts faculty may be called upon to visit schools in order to consult on and assess subject matter pedagogy. This will create the same tenure/promotion issues raised earlier with respect to teacher education faculty. Liberal arts faculty assuredly have little institutional support for spending time in schools. They may have little personal interest in doing so, complicating the process of creating new roles and responsibilities.[2]

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[2] On a somewhat different theme, there is little reason to assume that liberal arts faculty would be knowledgeable about subject matter pedagogy appropriate to students in elementary and secondary schools.

Joint appointments will be similarly problematic. For example, one teacher education program is considering hiring a subject matter specialist jointly with the science department at the university. Were such a person hired, he or she would have to "play according to the rules for tenure and promotion set by the science department." This would militate against involvement with a site-based approach to teacher education that would require time in schools for which the science department offers no rewards.

Ideas About Learning to Teach

No one seriously disputes the importance of classroom teaching experience for prospective teachers, and yet the content (in contrast to the structure) of that experience gets surprisingly little explicit attention. Teacher education programs and cooperating teachers might agree that prospective teachers should have experience teaching algebra to two different levels of students, for example, but they rarely discuss what it is that prospective teachers should learn about teaching, or about teaching algebra, or about teaching different kinds of learners, from those experiences. And, they rarely discuss what cooperating teachers need to know and be able to do in order to help student teachers achieve those goals.

The thinking that will go into creating professional practice schools is an opportunity to address (1) what it is that prospective teachers should learn from the field-based component of their teacher education programs, (2) how the experience might be structured to facilitate that learning, and (3) what classroom teachers and college faculty need to know and how they might learn it in order to be most helpful to prospective teachers. Several researchers observing the relationship of clinical experience on learning to teach point out the lack of attention to content and potentially conservative impact of classroom teaching experience on ultimate teaching practice (see, for example, Schlechty & Whitford, 1989; Feinman-Nemser & Buchmann, 1983; Zeichner, 1985). As several of the extant programs demonstrate, collaborative ventures provide a context in which practitioners' wisdom can contribute to the knowledge brought by university faculty. Jointly held seminars that involve school and university faculty in designing and implementing the student teaching seminar and in deciding what should be included in the student teaching experience are efforts to think explicitly and creatively about the content as well as the structure of teaching and other school experiences for prospective and induction year teachers.

Ideas about the nature of teaching. As collaborations form they will confront their own views about the nature of teaching, learning, and learning to teach, in particular. Much teacher education poses a model of teaching, and learning to teach, as the acquisition of craft knowledge. The assignment of novices to individual, experienced teachers reflects this orientation. By emulating the master teacher, the novice has the opportunity to learn the craft. Proposals that call for the assignment of novices to more than one cooperating teacher or mentor do not necessarily change this orientation to teaching as craft. Instead, they point out that any one "master" has a limited array of talents. Increasing the number of "masters" broadens the novices craft knowledge.

Professional practice schools aim to create a cadre of teachers who think of teaching as intellectual work--work that involves them in transforming knowledge about teaching as well as creating it through inquiry into practice. To do this, they propose that teachers and teacher educators become what Schon (1987) calls "reflective practitioners". This requirement poses a substantial set of problems for the creation of such schools. "Reflective" practice as a term is used frequently these days but it is not clear that it is used with meaning beyond the idea that teachers give some thought to their teaching (1) as they are doing it, and (2) after the fact. With respect to learning to teach, it similarly implies opportunities to talk about practice. Such conversations, however, merely by being "about teaching," do not necessarily embody the ideas that Schon proposes and the Task Force embraces. Even if they are structured so that teachers share their ideas, consider alternative strategies, and make joint decisions, such teacher activity will not necessarily result in practice much different from what we currently see as the best of traditional teaching. It may result in improved, but not different, practice just as infusing classroom teaching with activities does not necessarily alter the conceptions of knowledge provided to children. In order to develop different practice, teaching that encourages children to actively construct their own knowledge, and teacher education that encourages teachers to do the same with respect to learning to teach, teachers have to learn what the idea means for themselves as learners, and they must learn how to work with children in a way that is supportive of such learning.

The first three questions with which professional practice schools must grapple in their formative phase are, therefore, what exactly is this orientation to teaching, what does it imply for learning to teach, and how will it play out in real schools? Without doubt, teaching that encourages children to construct their own knowledge will place enormous, as well as novel, demands on teachers (Cohen, 1988). The next two questions are, who already understands and uses this orientation to teaching and learning to teach, and how will schools be organized so that others can learn? And, finally, if no one in the district or teacher education program currently uses this approach (which would not be surprising), what will be the process by which a cadre of teachers and teacher educators learns to work in this way?[3]

A significant hurdle, in other words, is likely to loom large at the outset, because the core construction of teaching practice and learning to teach proposed for professional practice schools is neither common in practice nor even very familiar. Under such circumstances, it is likely that the professional practice school created will differ only marginally with respect to ideas about teaching and learning to teach from what went before.

A note about students. Professional practice schools will be designed to support student success, yet this discussion has not mentioned students. It has spoken to several organizational and substantive issues involved in forming collaborations to improve and change the nature of preservice teacher education and the role of teachers in that enterprise. It has focused on teachers and teacher educators and the adult aspects of the organizations in which they work. This focus is not meant to minimize the host of issues that concern students and must be dealt with as professional practice schools are developed. An exploration of those issues is beyond the scope of this paper, but must be considered as new organizations and roles are created. No one intends for students to become lost in efforts to make schools "the institutional base for teaching as a profession" (Levine, 1988; also see Pechman, 1990).

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[3] Lieberman and Miller's (1990, pp. 97) example of a teacher asking young children to describe the thought processes by which they figured out a new word in context, is as much the kind of teaching that might be encouraged in professional practice schools--teaching that encourages children to construct their own knowledge and take seriously their own constructions--as it is an example of teacher inquiry.

Summary: School/university collaborations. Creating professional practice schools requires a unique kind of collaboration between the organizations most heavily involved in the enterprise--the public schools and the colleges and universities. It is unique because it asks each organization to change, to alter the pattern of authority relations that have characterized past associations, to reorganize work within schools, and to re-think the nature and source of knowledge about teaching and learning to teach that ought to inform the preparation of new teachers. It is also unique because it asks each institution to reconstrue the nature of teaching practice from one of craft to one of intellectual work. Thus, the formation of professional practice schools will not be a straightforward organizational or conceptual task. For the parties involved, it will be an adventure that requires a good bit of risk-taking, a tolerance for not "getting it right" the first time, and a firm commitment to the long-term goals. The success of the various endeavors will depend, in part, on the knowledge, skill, and fortitude of local participants. It will also depend on the larger political and governance context in which attempts to form professional practice schools take place. For that reason, the next section of the paper explores the potential impact of the state policy context on the formation of professional practice schools.

Professional Practice Schools in State Contexts

Public schools are governed by locally elected school boards. If such boards decide they would like to create professional practice schools, they have the authority to join into collaborative arrangements with teacher education programs and local teacher unions in order to reorganize schools toward that end. What importance does the state policy context hold, then, for what are fundamentally local decisions? Ten or fifteen years ago, state context would likely have had little impact on the organization and implementation of such decisions. The last decade of educational reform, however, has changed that. Local efforts today take place in a state policy environment that is complex, comprehensive, and often constraining.

Timar and Kirp (1989) report that in the past six years "the states have generated more rules and regulations about all aspects of education than in the previous 20 years" (p. 506). They now attend to issues of curriculum, assessment, teaching methods, homework, course requirements, and eligibility for extracurricular activities, to cite just a few areas addressed by policy. States have increased entry-level teaching salaries, created career ladders, and differentiated staffing plans. They have attempted to improve the quality of beginning teachers by altering course and practicum requirements for the initial, provisional teaching certificate.

Some of this increased oversight and attention, no doubt, is necessary and good. Cuban (1988) and Darling-Hammond (1988) point out that schools, left to their own devices, do not always act in the best interests of all children. They sometimes do what is expedient; they are always subject to competing interests and multiple constituencies, usually in situations of scarce resources and uncertainty about the efficacy of any course of action. Yet, despite the benefits associated with state attention to education, we now know that one unintended outcome of such policy initiatives is an over-regulated education system that has a difficult time responding to children's individual needs and in which teachers often work within severe constraints. (Wise, 1979; Darling-Hammond, 1988). Policies have reinforced long-standing tendencies for schools to be systems in which, as Darling-Hammond suggests, teachers are rewarded for "doing things right," rather than "doing the right thing."

Current proposals that call for a shift away from rules and regulations towards professionalizing teaching and restructuring school governance, aim to restore (or create) professional judgment--doing the right thing--to educational decisions. They aim to ameliorate and, where possible, eliminate rules and regulations that circumscribe teaching practice. Cognizant of the need for higher standards within the teaching force, these proposals call for the creation of stringent entry standards which will be controlled by the profession and not by the state.

But this latest approach to school reform must germinate in the complex state policy environment of heavy intervention and oversight created during the last decade. It must flourish, in other words, in environments that do not appear conducive to growth. Those who wish to create professional practice schools will have to figure out how to work within environments replete with rules and regulations.

Timar and Kirp (1989) point out that the environmental impact of policies, for better or for worse, results not only from their accumulation, but also from the way in which they are construed:

> School reform efforts that ignore the complexities of the policy environment often fail... There is no single policy or single combination of policies--such as merit pay, the use of mentor teachers, teacher competency testing, and stricter teacher certification requirements--that will automatically transform mediocre schools into good ones... [but] while specific policies may not be important determinants of school improvement, the strategies that states adopt do make a difference in reform efforts. (p. 506)

The authors sort policy strategies represented by the reform agendas into three basic models:

- Rational planning which identifies the problems to be solved and then searches for the correct solutions;
- Market incentives which rely on state level policy development and implementation bargained at the local level; and,
- Political interaction which stresses the process of decision making and is distinguished by "broad state policy goals, with discretionary authority and flexibility in local implementation. This approach to policy implementation aims to integrate state policy goals with local conditions and practices" (p. 76).

States working within the model of "rational planning" are likely to employ top-down mandates with standardized requirements as their major reform strategy. This approach allows for little local discretion about whether to participate or how to shape the reform to respond to local district conditions. In contrast, the "market incentive" approach creates artificial markets by making funding available for a set of activities supported by the state. Participation is left to local discretion, as is the opportunity to shape the program to local conditions. Finally, the "political interaction" model sets out broad state goals towards which districts must work. However, the model encourages districts to become competent in problem solving so that they can develop locally appropriate ways to achieve those goals.

These models describe three dominant policy strategies, but it is important to note that states do not always operate within only one model. In some domains, they may provide incentives; in others, rules and regulations. Even within the same policy domain, states may be inconsistent in their approach to reform. For example, states may applaud in principle the shift to increasing professionalism and school-based decision making, yet their policies may organize district-level accountability in such a way that school-based decision making becomes impossible in many areas. It is fairly common to find, as does Darling-Hammond (1988),

> reform proposals [that] at the same time urge greater involvement of policy makers in shaping schools and greater involvement of teachers in shaping teaching. Consequently, we see states passing laws that pay lip service to teacher professionalism while, with the other hand, they enact greater restraints on curricula, textbooks, tests, and teaching methods. (p. 60)

It is in such contexts that professional practice schools will originate and develop. And, for this reason, it is worthwhile examining the likely interaction of state policy strategies with the ideas that undergird professional practice schools.

Contrasting Policy Strategies

Anyone who peruses summaries of state legislative action related to education reform quickly learns that the enterprise is neither static nor complete. States continue to adopt new policies and modify older ones. Any attempt to consider the impact of specific state policies on the development of professional practice schools, then, might seem like a pointless endeavor. The policies discussed, one could argue, might be altered or gone by the time of the reading; or, new policies might have changed the context within which older ones exist. To allay such concerns, keep in mind first, that as I explore the impact of current policies on the formation and sustenance of professional practice schools, I am concerned with the general strategy of the policy and the area of teacher education that it addresses. I use specific policies only as exemplars.

Second, in selecting specific policies out of each state's much larger array of policies, I am not claiming to represent the complete policy context of each state nor suggesting the extent to which the state as a whole would be hospitable to professional practice schools. My goal is to suggest a way to think about the impact of policies in considering the development of professional practice schools. I chose Massachusetts, New York, Florida, and Connecticut because each has one or more policies appropriate to this task. The accumulation of policies in each state will certainly influence the extent to which professional practice schools might flourish, but my purpose in this paper is not a state-by-state consideration.

What is important in judging the likely interaction of state policies with professional practice schools is whether they have an orientation that is compatible or at odds with the underlying philosophy and orientation of professional practice schools. Facilitating policies will (1) enable schools to develop locally conceived school/college collaborations, (2) support, or at least remain neutral with respect to new roles for teachers in teacher preparation, (3) sustain or create local authority to develop preparation programs and assessment strategies for those who will work with preservice and novice teachers, (4) support an inquiry approach to teaching as work, (5) view teachers as producers as well as consumers of research knowledge, and (6) consider the school as the unit of reform.

Policies in areas other than these will assuredly influence the organization of teaching and learning and, therefore, professional practice schools. State high school graduation examinations, for example, will influence what is taught and the time by which students must master the material. The implementation of standardized reading and mathematics exams will influence the sequencing and content of some subjects. Policies that circumscribe daily time to be spent on required subject matter, or the nature of student evaluation will impede local efforts to create curriculum, organization, and evaluation strategies. These kinds of regulatory and monitoring devices assuredly will interfere with professional practice schools' orientation to teaching learning and assessment. Yet, one can imagine local adaptations and waivers from at least some of these constraints. The more serious threats to professional practice schools are likely to come from such policies as standardized, behavior-based teacher evaluation or state-defined career ladder plans that construe teaching in terms inappropriate to professional practice schools or which preclude the possibility of local program development.

With these kinds of issues in mind, the next section of this paper continues with a discussion of several state policies that relate to three areas pertinent to professional practice schools: (1) arrangements and requirements for those who support the clinical experience of preservice and first-year teachers; (2) restructuring schools for student- and teacher-learning; and (3) the orientation of the state to "good teaching" and to acceptable sources of knowledge about teaching. These are areas that will be critical to the formation of professional practice schools because they are central to the preparation of new teachers and to the role that experienced teachers will have both in their own development and in the preparation of their junior colleagues.

The Cooperating Teacher Training Program in Connecticut.[4] The Cooperating Teacher Training Program is one component of Connecticut's comprehensive effort to improve the preparation of beginning teachers and increase the involvement of experienced classroom teachers in that enterprise. The Program, aimed at the clinical component of preservice teacher education, (1) requires prospective teachers who wish Connecticut certification to student teach with "trained" cooperating teachers, (2) outlines the parameters of cooperating teacher training, (3) mandates the organizational structure in which it will take place, (4) provides direct payment to teachers for their work with student teachers, and (5) requires teacher participation in decision-making relevant to certain aspects of program development and implementation. The program was conceived as one in which campus and field-based teacher educators would merge their strengths to improve student teaching supervision by classroom teachers. The state defined the way in which this merger would occur.

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[4] As part of its comprehensive reform of teaching, Connecticut has created a Mentor Teacher and an Assessor Teacher role along with formalizing the role of cooperating teacher. Teachers who wish to work as mentors or assessors must also complete state-developed training programs. The discussion of the cooperating teacher program is based on Neufeld (1989).

To be specific, Connecticut required the formation of consortia--collaborations of at least two teacher preparation institutions, a regional service center and a set of school districts--to develop training programs that complied with externally-developed state guidelines that specified content and duration. These collaborations were, to a great degree, born out of necessity: colleges were required to work with each other and with school districts in their geographical area if they wanted their graduates to be eligible for state provisional teaching certificates. Thus, if the school/university collaboration that will become the basis of professional practice schools (1) depends on a match between participants' purposes and orientation to teaching and learning, and (2) will be devlopmental with respect to form and content, then state-formed consortia are not likely to serve this function. Based almost exclusively on geography, state-formed consortia were created to accomplish a required, externally-defined task. Their existence, however, adds to the complexity of the policy environment in which professional practice school collaborations would form.

Connecticut's policy has several other features that complicate movement toward professional practice schools. Their improvement strategy is targeted to individuals, and the incentive structure encourages districts to involve, over time, all trained, cooperating teachers in order to give them the opportunity to earn the stipend that accompanies the position. This reasonable local accommodation to policy can conflict with a college's desire to cluster its student teachers within particular schools. For the same reason it would likely discourage the development of professional practice schools, wherein teacher education--and so the work of cooperating teachers--would be concentrated.

Two other features of Connecticut's reform policy strategy are worth noting as they bear on the potential development of professional practice schools. By designing a program that sustains the traditional relationship of one cooperating teacher working with one student teacher, the state has adopted a craft model of teaching and learning to teach. While this approach to assisting beginning and preservice teachers may well improve teaching, it is not designed to counter prevailing, isolated practice or to create an inquiry approach to teaching and learning to teach. As such, the policy suggests an orientation different from that envisioned for professional practice schools, which would aim to create roles and relationships that stress collaboration among experienced and novice teachers, and an inquiry, rather than craft, approach to learning to teach.

And last, designation as a "trained" cooperating teacher is based on participation in the program, not on any demonstrable achievement or competence. The absence of standards is an omission which has implications for professional practice schools, in that such schools would likely recognize the fact that those who work with novices must have demonstrable knowledge and skill in their work with those novices. Although the state could develop such standards, without them professional practice schools might want to create and implement local performance standards for cooperating teachers. While this would not be antithetical to Connecticut's goals, it would complicate the structure of the state's program by requiring some teachers (those in professional practice schools) to meet locally-set standards before they would be eligible for state compensation, while others would be compensated for similar work solely on the basis of participation in training.

The design of this reform suggests that Connecticut felt it had a quality control problem rather than a fundamental design problem (Cuban, 1988). The state was not envisioning changes in schools, the organization of teaching practice, or the basic preparation of teachers. Its strategy was to improve the quality of teaching within the existing organizational structure. Despite the fact that some organizational changes external to schools occurred--the creation of mandated consortia that included colleges and school districts, and teacher-dominated district committees that selected participants for training--the fundamental enterprise remained unchanged: one student teacher worked with one cooperating teacher as a culminating activity in preservice teacher education.

Connecticut's approach to reform was a set of well-integrated efforts that put it squarely in the mainstream of what Cuban (1988) refers to as "first-order" quality control:

> First-order changes are reforms that assume that the existing organizational goals and structures are basically adequate and what needs to be done is to correct deficiencies in policies and practices...solutions to quality control problems.... First-order changes, then try to make what exists more efficient and effective without disrupting basic organizational arrangements or how people perform their roles. (pp. 228-229)

Connecticut's efforts to promote teacher professionalism and status through the state-designed and state-implemented mechanisms of new roles, training, and payment, are predominantly a "rational planning" policy strategy, in which state control and authority over the enterprise is increased. The policy strategy by which the state is working to professionalize teaching includes increasing the role and authority of the state Advocates of professional practice schools might suggest this approach runs counter to their own efforts to professionalize teaching by controlling teacher education at the school level.

Professional development policy in New York. Also concerned with upgrading the status and expertise of individual teachers, New York has not created state-wide, detailed, mandatory programs with which to accomplish these goals. Instead, New York has encouraged teacher development through the funding of local teacher centers, through a pilot program to support restructuring efforts, and through provision of funds for mentor programs in those districts that desire to create them. New York's current policy strategy most closely resembles what Timar and Kirp (1988) describe as a set of market incentives. The state has provided funding for specific kinds of endeavors; districts, if they have interest in those endeavors or can meld local priorities with those of the state, can seek state funding. Furthermore, New York appears not to have defined the reform problem primarily in terms of quality control. It seems to have proceeded with what Cuban (1988) would call a "second-order" change orientation:

> Second-order changes...aim at altering the fundamental ways of achieving organizational goals because of major dissatisfaction with current arrangements.... [they] introduce new goals and interventions that transform the familiar ways of doing things into novel solutions to persistent problems. The point is to reframe the original problems and restructure organizational conditions to conform with the redefined problems. (p. 229)

Policy makers and teacher educators in New York suggest that the state would like to take an active role in reorganizing authority relations in schools by promoting shared decision-making at the school level. (New York State already requires its least effective school districts to involve teachers in school-site planning, recognizing the importance of local attention to needs assessment, planning, and commitment to implementation.) In its most recent commission report, A Blueprint for Learning and Teaching, New York (1988) fosters the idea of restructuring schools and increasing teachers' roles in decision-making. The report explicitly states: "The structure now in place is failing to meet the needs of too many children" (p. 2).[5] It proposes a wide range of changes that differ from what Connecticut has in place, in that they focus on the school, not the individual teacher, as the unit of reform. Proposing a fund to support competitive grants to districts that want to engage in restructuring, the report recommends that districts' proposals for support should include such features as (1) joint decision-making at the building level; (2) "teams of teachers working with groups of students"; (3) school-based budgeting; and (4) "alternate organization of the school day, school year, grade, and subjects" (p. 9). Nothing in New York's current restructuring plan would conflict with the formation of professional practice schools.

Three current New York staff development programs provide examples with which to consider the implications of that state's approach to policy on the growth of professional practice schools. They are: the Mentor

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[5] The report has not yet been adopted by the New York State Board of Regents; therefore, it is not state policy at this writing.

Teacher Program, teacher centers, and the Fund for Innovation. Each is organized to encourage local program development and strategies to improve teaching and learning.[6]

The Mentor Teacher Program. School districts that wish to develop opportunities for experienced teachers to work with novices may submit proposals to compete for state funds under the Mentor Teacher Program. Proposals must indicate that a district committee composed of 51 percent teachers will select mentors, and that mentors will be released for 10 percent of their time, and intern teachers for 20 percent of theirs. State funds pay for replacing mentors and interns in their classes. District committees develop their own criteria for selecting teacher-mentors. The state insists only that those selected must have taught for at least five years. Locally-designed and implemented mentor training is required; as is evaluation of the mentoring effort. Currently, 10 percent (approximately 70) of the state's districts are implementing state-funded mentoring programs.[7] Given the absence of guidelines on the form and content of the components of a mentoring program, there appears to be no mismatch between this program and the kind of clinical support that might be organized in a professional practice school.

Teacher centers. As a way to help teachers shape their own professional development, New York began funding teacher centers in 1984. The governor introduced legislation for the centers and New York State

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[6] I am grateful to Helen Hartle, Coordinator for Inservice Education in New York, for helping me obtain information about professional development programs in New York.

[7] New York plans to mandate mentoring for all new teachers in 1993. Programs will still be developed locally.

United Teachers worked out the detailed plans. Single districts or consortia can apply for teacher center funding on an annual basis. Centers, which are required to establish links with higher education and the business community, are governed by local boards made up of teachers representing the local bargaining agent (51 percent of membership), parents, representatives of higher education, industry, nonpublic schools, the school board, and local administrators. Funds are meant to supplement, not supplant, district staff development efforts.

New York has defined areas of staff development in which it has a special interest--technology, curriculum development that goes beyond state syllabi, and retraining teachers in critical areas such as math and science--but districts are free to attend to these areas as they choose. The state describes its guidelines for teacher centers as "enabling" creativity to flourish at the local level. At the moment, there are 103 teacher centers in New York, which fund, for example:

- grants to individual teachers that enable them to conduct research;
- teachers' costs associated with attending professional meetings; and
- collaborations between universities and teachers that might focus on content knowledge.

Teacher centers can direct efforts to novice teachers, leading to programs that might intersect with mentoring efforts.

Each teacher center must conduct a needs assessment to set priorities and programs and to establish goals which will serve as the basis for evaluation. In applying for funding, centers must describe the needs assessment process, how they develop priorities, and how they assess their success. Evaluation must focus not only on individual center activities, but on the extent to which the center as a whole has met its goals. What those goals are and how they are assessed, however, is left to local discretion. The state, in reviewing proposals, looks only for the existence of a process by which this can be accomplished. As with the mentoring program, there is nothing about the organization and implementation of teacher centers from the state level that would conflict with ideas embodied in the concept of professional practice schools. In fact, teacher centers could use their funds, in collaboration with colleges and universities, to pursue staff development for new and experienced teachers that would support the creation of such schools.

The Fund for Innovation. New York recently created a pilot, competitive grants program that is designed to approach school reform through shared decision-making negotiated with collective bargaining units. The Fund is encouraging schools to develop collaborative approaches to school management. Within the 14 pilot projects currently in operation, schools are working on, for example, ways to reorganize scheduling, curriculum, and multiple aspects of middle school organization. Again, the emphasis in this program is compatible with the organization and focus of professional practice schools.

New York has intervened less than has Connecticut in creating new roles for teachers in preservice or induction-year teacher education. It provides opportunities for professional development with respect to teacher education through funding for mentor teacher programs and through its established vehicle of teacher centers. New York's reforms permit the development of varied approaches to support clinical teacher education and encourage increased teacher participation in school governance and decision-making. On the other hand, because New York is using the policy model that creates artificial markets (as described above), districts are free to involve themselves in this reform, or not. From the perspective of those thinking of developing professional practice schools, New York provides a policy context in which there is considerable freedom to use existing policy to support such innovation.

Professional development schools and restructuring efforts in Massachusetts. On a smaller scale, Massachusetts is supporting a number of programs, which, like New York, it funds through a market incentive strategy of competitive grants. Two of these programs have particular relevance for professional practice schools: The Carnegie Schools Program and The Professional Development Schools Program. Both encourage school restructuring. For those interested in the impact of policy on the creation of professional practice schools, the appropriate question is, what is the fit between state-designed restructuring efforts and the design of professional practice schools? Massachusetts provides examples with which to address that question.

The first restructuring effort is based on ideas proposed in the Carnegie Report, A Nation Prepared: Teachers for the 21st Century (1986). According to the Report of the Special Commission on the Conditions of Teaching from the Massachusetts State Legislature (1987, August), the purposes of the Carnegie Schools are to

- restructure the environment of teaching, freeing teachers to decide how best to meet state and local goals for children;
- foster professional discretion, autonomy and accountability by first providing teachers with opportunities to participate in the setting of goals for their schools and then evaluating the success of schools in achieving these agreed-upon standards of performance;

- provide a variety of approaches to school organization, leadership and governance; and

- provide teachers with the support staff needed to be more effective and productive (p. 13).

The state does not have in mind one model of a restructured school that would be best for all districts, schools, teachers or students. Rather, it is encouraging variety. Little in the Carnegie School program would interfere with the restructuring that might be associated with the creation of professional practice schools. Within this funded program category, however, schools are neither asked nor encouraged to pay attention to reorganizing to improve the education of teachers. Carnegie schools are fundamentally restructured schools that attend to student learning.

The Massachusetts State Legislature (1987), created a separate policy to address restructuring issues associated with the improvement of teacher education and learning to teach. That policy encourages the creation of Professional Development Schools,

> in which new models of professional education are jointly designed and administered by school and college staff, in order to strengthen the role played by school-based professionals in both the initial training of prospective or new teachers and in the on-going development of experienced teachers. In addition, Professional Development Schools should ultimately forge a new partnership between schools and colleges in the operation of teacher education programs. (p. 19)

The creation of two different restructuring programs suggests that Massachusetts policy makers see a separation between teachers' learning and children's learning, a separation not present in the conception of professional practice schools. Massachusetts policy does not preclude attending to learning to teach in the Carnegie schools. The program, however, does not emphasize this domain nor does it encourage the formation of school/college collaborations for teacher education purposes.

The Professional Development School Program, in contrast, which awarded the first set of grants in January, 1990, creates opportunities to restructure to improve preservice teacher education. This program requires the formation of school/college collaborations to restructure teacher education so that, according to the concept paper provided with the Massachusetts Professional Development School Grants Program Request for Proposals (1989, October), "the heart of future teacher education programs take [sic] place in school-based, clinical settings under the direction of school-based professionals and university faculty." Schools are free to design professional development schools as they prefer. However, the request for proposals indicates that the state is particularly interested in funding programs which address priority topics including, "inquiry-based and reflective teaching, collaboration and collegiality, ...new organizational structures and roles that strengthen collaborative efforts..." It notes that in professional development schools, school and university faculty, "might pursue cooperative research, jointly plan and administer inservice programs, test new instructional models, study the applicability of research to their schools and other schools, and develop new forms of curriculum and performance evaluation and assessment, and exchange teaching roles." It appears that one could obtain funding under the Massachusetts policy to create a professional practice school.

The presence of a state-initiated program to create restructured schools that are excellent sites for learning to teach, then, will not necessarily constrain the creation of professional practice schools in that state. Policy guidelines that encourage local, collaborative program development, and leave local school/college collaborations free to determine the form and content of preservice teacher education and preparation of school-based teacher educators, might well accommodate professional practice schools. State policies that prescribe an approach to teaching, on the other hand, may prove problematic. In the case of Massachusetts, the state's preference for inquiry and reflection is in keeping with the orientation proposed for professional practice schools. Were Massachusetts to adopt the orientation to teaching in place in Florida (discussed below), state policy would play a more constraining role in the creation of professional practice schools.

The Florida Performance Measurement System. States and districts often seek behavioral indicators of good teaching. First, they want observable data that will reliably distinguish good from poor teaching for purposes of evaluation. Second, if certain behaviors can be associated reliably with good student achievement outcomes, then novice and experienced teachers can be asked to use those behaviors and so improve their teaching. With behavioral indicators, identifying good or poor teaching requires attention only to the presence or absence of behaviors that have been identified as "effective" or "ineffective" whenever they occur regardless of the subject, context, or students involved (Florida Office of Teacher Education [1985, June]).

In Florida, the research on behaviors associated with teaching effectiveness has been translated into a set of performance indicators expressed as the Florida Performance Measurement System (FPMS) and used to evaluate beginning teachers during their internship year.[8] The FPMS divides the knowledge base of teaching into six areas called domains, with each domain further subdivided into a set of concepts, each of which has a set of related behavioral indicators, a set of teaching principles, and a survey and analysis of relevant research findings (Macmillan & Pendlebury, 1985).

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[8] For a review of this research, see Brophy & Good (1986); for use of the Florida Performance Measurement System, see Peterson & Comeaux (in press); for brief descriptions of state performance assessment programs for beginning teachers, see Wise & Darling-Hammond (1987).

Because of its behavioral and generic orientation to teaching knowledge and performance, the requirement to teach according to the notions of effectiveness expressed on the FPMS would likely constrain implementation of the kind of teaching proposed for professional practice schools. The FPMS goes against the grain of what some would consider to be a professional orientation to teaching. The orientation proposed for professional practice schools would, according to Peterson and Comeaux (in press),

> focus on the exercise of professional judgment by the teacher, assuming that good teaching involves not only mastery of instructional behaviors and teaching techniques, but also the professional knowledge and judgment about how, when, where, and with whom to use these techniques as well as how to change and adapt them where appropriate.

The construction of teaching knowledge present in the Florida policy stands in stark contrast to this model not only because it is generic and dependent on behavioral indicators rather than reflection, but also because it views outsiders--"researchers"--as the source of knowledge about teaching. The FPMS asks teachers to suspend, or never develop, their own skill and judgment about teaching, and, instead, to rely on the information provided by experts who study teaching. This orientation to what knowledge is and who can produce it runs counter to that proposed for professional practice schools. State policy that mandates teachers' adherence to this conception of knowledge and teaching if they are to be certified, conflicts with the ideas central to professional practice schools.[9]

Comparing the policies. Each of these states is strongly committed to improving the quality of teaching and learning and is dedicating considerable human and financial resources to that goal. They differ not in their commitment, but in what they identify as stumbling blocks to improvement and in their approach to remedies.

- New York's professional development policies and proposals suggest that the fundamental design of schools is flawed and proposes to restructure them, while Connecticut accepts that organization, and is choosing to improve teaching and learning in traditionally organized schools. Massachusetts is beginning to support alternatives to current organization.

- Policy makers in all four states know that teachers and schools are essential to reform. But they have created policies with different emphases. Connecticut and Florida, by their choice of improvement strategies, have emphasized the importance of individuals--teachers' knowledge, skill, and performance--while New York and Massachusetts at the moment are emphasizing schools and the conditions of teaching, learning, and learning to teach.

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[9] Florida, as a state, is supportive of efforts to decentralize school governance to the school level. School-based management, such as that found in Dade County, is in accord with state policy. While the state has supported decentralized governance structures, however, with development and implementation of the FPMS, it has taken a centralized approach to policies defining effective and appropriate teaching strategies.

- Connecticut and Florida selected a body of knowledge and skill to be mastered; New York and Massachusetts have not identified the specific knowledge and skills that its teachers should master, nor have they put in place formal structures in which learning should occur.

- Neither New York, Connecticut nor Massachusetts has established performance standards for those who would support the clinical experience of pre-service teachers or the mentoring of first-year teachers regardless of the approach to support they have taken.

Each of these policy approaches has strengths and weaknesses with respect to the goals it is trying to achieve. All other things being equal, however, some policies will create greater constraints for those attempting to create professional practice schools than will others.

Policies such as those in New York and Massachusetts, by focusing on the school as the unit of reform, by encouraging local variation and collaborations with colleges, and by avoiding guidelines for the form and content of either mentoring or cooperating teacher programs or performance, provide a context in which professional practice schools could develop within the bounds of existing policies. Professional practice schools in New York could fund some of their activities through the Mentor, Teacher Center, and Fund for Innovation Programs. More limited funds are available in Massachusetts, but those that exist could be used for professional practice schools.

Connecticut, in contrast, does not have a school-based focus to its reform efforts, concentrating instead on individual teachers. It provides a context rich in policies that create organizational components and roles structurally similar to those proposed for professional practice schools, but different enough in content and source of authority that they might conflict with and complicate efforts to create professional practice schools. For example:

- A professional practice school could be developed based on a model of teaching that includes the Connecticut teaching competencies. But, it is likely that such a school would seek exemptions from the craft model of teaching that places novices with one cooperating teacher or one mentor.

- Professional practice schools might want to create their own professional development programs for mentors and cooperating teachers. Questions would then, no doubt, arise about exemptions from the state's program, as they would about the state's paying mentors and cooperating teachers who did not complete the state's training programs.

- The consortium structure, by establishing partnerships and district cachment areas, complicates the choice of school/ university collaboration partners for professional practice schools.

- The cooperating teacher program has a potentially negative impact on the possibility of creating professional practice schools because of its effect on the ability of such schools to maintain stable school-site placements over time.

This conclusion on the match between state policy context and the development of professional practice schools does not imply an endorsement or rejection of any state's policies. The purpose of the analysis is to draw attention to the kinds of state policies that exist and their implications for the creation of professional practice schools. In all states, irrespective of the policies in place, creating such schools will be difficult because the ideas which are complicated and as yet not well-formulated, will require new ways of thinking and working for both teachers and college-based teacher educators.

Conclusion

Professional practice schools would be organizations in which many long-held views on the way school and learning to teach is "supposed to be" would be transformed. Creating such schools depends, in part, on the ability of those currently engaged in teacher education and school teaching to imagine and implement new roles, responsibilities, relationships, and ideas about the nature of the work they do and the kind of organizations in which it might better be accomplished. Beyond imagining, it requires serious conversation and negotiation about issues of authority within and between schools, school districts, teachers' and administrators' organizations, universities and colleges, and state departments of education, among others. Professional practice schools imply real shifts in authority and control; as a result, negotiations and conversations will not always be easy.

At the local level, in order for professional practice schools to develop, at least the following conditions must exist:

- Desire on the part of teachers and administrators to reorganize their school so that it can become a center of inquiry focused on improved teaching and learning.

- Desire on the part of classroom teachers and university-based teacher educators to work together to jointly establish a school site that is good for preservice and induction teacher education.

- Organizational support at the college and the school for reorganizing faculty and teachers' roles, rewards, and resources with respect to teacher education.

- Local authority to determine the process and content of the pre-service and induction year teacher education component that will occur in the school.

- Local authority to develop appropriate assessment criteria and strategies based on a conception of teaching as reflective practice.

With these conditions met, it would be prudent to next consider several features of state-level policy to determine their match with the ideas central to professional practice schools. As demonstrated through policy examples from Florida, New York, Massachusetts, and Connecticut, some of these will be more conducive than others to the formation of professional practice schools. The potential to develop professional practice schools could be strong because of the absence of policies pertinent to such schools, or because extant policies urge schools in compatible directions. With regard to state influence, then, it would seem important to examine policies for the extent to which they enable or at least permit:

- school reorganization with respect to students' as well as teachers' work, with respect to issues of governance as well as teaching and learning;

- the development of locally conceived school/college collaborations attentive to issues of preservice and continuing teacher education;
- within such collaborations, the creation of locally designed clinical support roles for experienced teachers, including considerable local discretion around issues such as selection, preparation, and evaluation for such roles; and
- an inquiry approach to teaching and learning.

This exploration of context at the school/university and state levels is not meant to discourage those who seek to establish professional practice schools. It is meant to convey the message that such schools will not exist in a vacuum or in an ahistorical moment in time. If we want them to have a chance to succeed, we cannot afford to ignore the importance of the environments in which we propose their growth.

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AFTERWORD

A Look at Professional Practice Schools With an Eye Toward School Reform

Marsha Levine

Professional development schools and professional practice schools are rapidly becoming important terms in the educator's lexicon. Generally, they refer to school sites for clinical teacher education—usually offering preservice training. First year teacher programs or internships are a part of the agenda and inservice staff development is often included in the mission. The establishment of the site is typically a collaborative venture between a university and a school district; sometimes, the teachers union has a role to play. These efforts are directed at improving teacher education, specifically by focusing on the clinical experience.

Looking at professional practice schools through the lens of teacher education makes them appear as extensions of the idea of the lab school with some important modifications. They have a more collaborative governance structure, and they often reflect the notion that practitioners should have more responsibility for the clinical education of new teachers. In this conception, professional development schools may offer a decided improvement in the preparation of teachers, particularly if they can bring structure and standards to the clinical education experience.

It is also possible, however, to view such schools through the lens of education reform and see them as heralding a major structural change in public schooling. They can integrate the processes of restructuring schools and reforming teacher education. Through this point of view, the potential of the professional practice school as an instrument of change is powerful. The AFT has viewed its work on professional practice schools in this way, seeing them as restructured schools with responsibility for clinical teacher education and the support of practice-based research.

In order to elaborate on the relationship between professional practice schools and school reform it is useful to begin with some questions--questions which are at the heart of the reform effort. For example:

- What is the best way to structure teaching and learning?
- What are restructured schools? And, what do teachers do in them?
- Why is so little happening in the schools and districts, although we have been trying to make changes for so long?

The answers to these questions give insight into the relationships between professional practice schools and school reform.

The answer to question one, "What is the best way to structure teaching and learning? is "We don't know." There is no one best way. How do we find out the better ways? Through research--school-based research, research into practice. Not only don't we know the answers to the questions such research raises, we hardly know what the right supporting questions are. For example, is the question "How do we reduce class size?" or is it "How do we personalize instruction?" What questions do teachers ask? What do they want to know? How does one go about getting answers to these questions? In large measure, the answers will come through involving teachers in research-based examination of their own practice, reflection on their own teaching, and an orientation to solving problems together. How well do teachers do research together and individually? Not very well right now, because they are neither educated to do so, nor do the environments in which they work support, encourage, or expect them to do it. Teaching as research is not a commonly held conception. If we are ever going to have professional practice in teaching, then we must also support the kind of on-going research needed to provide the knowledge base that informs that practice. One purpose for which the professional practice school is designed is to support continuous examination of practice. Sustained by structures and norms of inquiry and colleagueship, teachers must work together and individually, to continually generate practice-based knowledge.

Hence the first link to the school reform movement: professional practice schools are the institutions designed to generate an important part of the knowledge base upon which the reform agenda is built.

The second set of questions, "What are restructured schools?" and "What do teachers do in restructured schools?" is more difficult to address. Restructuring is a word which has crept into everyone's vocabulary--from Mikhail Gorbachev's to David Kearns'. Restructuring is an activity whose purpose is to create schools designed to help all students to use their minds well and learn skills that will allow them to function in society. Restructured schools create an environment of community, inquiry, and high expectations. These attributes are at the core of a restructured school. The curriculum, governance, time, space, and roles, relationships, and responsibilities of people in that school are reordered, restructured if you will, to support that core vision. The teacher's role undergoes dramatic changes in such a school. These changes include different instructional strategies as well as new roles teachers have never played--institution-based roles that require them to work together with their peers and become involved in evaluating, analyzing, and making decisions on a school-wide basis.

A few examples will illustrate what is meant here. Engaging students in active learning directed at deep knowledge of content and the development of thinking and problem-solving skills will require reflective, analytic, inquiring teacher practice. Teaching will no longer be mostly telling; the teacher will become the coach, questioner, facilitator, organizer, the one who frames and solves problems, judges, compares, observes, inquires, and consults. Among the teaching strategies she uses will be group problem solving, peer teaching, cooperative learning, reciprocal teaching, and project work involving real consequences. Instead of listening and recalling, students will, as E. M. Pechman writes above, invent, explain and elaborate, extend their thinking, and defend their positions.

In addition, teachers will assume new responsibilities school-wide. They will collaboratively evaluate and review practice in their school; focus on the individual and collective needs of students in faculty-wide forums; take on such organizational functions as grading policies, student and teacher assignments, organization of instruction, curriculum design, resource allocations, and scheduling (Darling-Hammond, 1988).

Where will teachers, both new and experienced, learn these new roles? Where will they be trained and socialized into new settings, expectations, and norms for schooling? There has already been considerable school-based effort directed toward restructuring by coalitions like the Essential Schools Project, Schools for the 21st Century, the Central Park East

Collaborative, and schools modeled after the Cologne-Holweide school in Germany, and the Key School in Indianapolis. None of these experiments, however, have given serious attention to the question of how to educate teachers for the new and different roles required in such schools. Without a deliberate effort to educate new teachers and induct them into transformed schools, the efforts of the committed few will almost certainly have little impact on the broader community of schools and on the development of professional practice in teaching. Restructuring without attention to teacher education and induction is probably doomed to a narrow, parochial existence. The converse, development of professional practice schools with no link to restructuring, is equally flawed; it will, perhaps, produce better ways to educate teachers for the schools we have, but will have little influence in changing public education. It is difficult to imagine significant change occurring in public education while the clinical education of teachers remains a mirror of the existing school model and a powerful way of reinforcing it. Professional practice schools are designed to socialize new teachers into restructured settings and help them develop the skills and knowledge they need to teach in those settings.

The answer to the third question--"Why is so little happening in the reform movement and what do professional practice schools have to do with that?"--is complicated. Many people are not yet convinced that there is a real need for change, thinking that, if there is a problem, it is somebody else's, not theirs. In addition, we see little change because changing institutions is difficult. One of the operating principles of change is "everything is connected to everything else." Once you change one thing, you have then to deal with other things. People can become paralyzed in the face of that recognition. Another reason little is happening is because people recognize, rightly, that change is hard work, which they tend to avoid unless they see something in it for themselves. Right now, there are few incentives in the system to support change, to motivate people to take risks and work harder. Furthermore, there are no goals out there for people to measure their success by and no standards to guide their practices. This is where the professional practice schools come in, in a potentially powerful way. The creation of professional practice schools, that can act as exemplars of both good practice and of the institutional structures required to support that practice, can provide much needed models toward which schools and schools systems can look. The tremendous impact of the development of teaching hospitals on both medical practice and on the institution of the hospital is a lesson in the power such an invention can have.

Professional practice schools can move the restructuring effort forward. Such schools can support much needed research in practice, educate teachers for new roles and responsibilities in restructured schools, and provide the essential models and exemplars for others to look toward. When professional practice schools begin to reform teacher education in restructured settings, they will become levers for school reform.

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